

1967

SOUTHERN ALBERTA INSTITUTE OF TECHNOLOGY



CALENDAR

CALGARY, ALBERTA, CANADA

1967

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Other Publications:

- Annual Prospectus — Alberta College of Art
- Annual Calendar — Evening Courses
- Annual Announcement — Correspondence Instruction Division available without charge.

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FORTY - EIGHTH ANNUAL CALENDAR

1967 - 1968

SOUTHERN ALBERTA INSTITUTE OF TECHNOLOGY

CALGARY - ALBERTA - CANADA

*Mr. Mc Nulty -
Art & Design course,
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HON. R. H. MCKINNON — MINISTER OF EDUCATION

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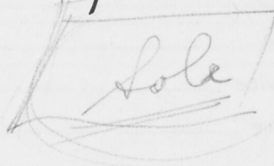
Student in
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Mr. Morris
Pres.

Martin -
Southern Alberta
Institute of Technology

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Main Bldg.

UNDER THE DIRECTION OF THE
ALBERTA DEPARTMENT OF EDUCATION

FINANCIALLY ASSISTED BY THE
GOVERNMENT OF CANADA

HON. R. H. McKINNON - - - Minister of Education
T. C. BYRNE - - - - - Deputy Minister
J. P. MITCHELL - - - - - Director of Technical and Vocational
Education
D. C. FLEMING - - - - - Principal

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T. C. BYRNE
Deputy Minister of Education



J. P. MITCHELL
**Director of Technical and
Vocational Education**



D. C. FLEMING
Principal

The Southern Alberta Institute of Technology extends a special tribute to all instructional and non-instructional staff, to all Institute graduates, and to all others who have contributed to Alberta's and Canada's technical progress during the last fifty years.

D. C. FLEMING,
Principal.

SOUTHERN ALBERTA INSTITUTE OF TECHNOLOGY

The Southern Alberta Institute of Technology, located on Calgary's North Hill, views the Bow River valley and City Centre to the south and the foothills ranchlands and the Rocky Mountains to the west.

The Institute of Technology provides educational programs in technology, art, business, trades, correspondence instruction, and adult education as a service not only to ten thousand students each year but also to employers across Canada.

Three-quarters of the students enrolled in full-term day courses are from Alberta; one-quarter are from other Canadian provinces and from other countries. Most of the graduates take employment in Alberta, but many accept positions in other provinces, and a few seek careers in other countries.

Curricula, laboratory facilities, and instructional methods are kept up to date through guidance from advisory committees representative of industry, business, the professions, and government.

The Institute's two- and three-year post-high school courses in technology help to meet industry's need for a rapidly increasing number of employees with sound backgrounds in academic education, theoretical knowledge, and technological skill for industrial research, equipment installation, production planning, plant operation and inspection, product design and development, technical sales and teaching. The technician and technologist are links between the scientist and engineer on the one hand and the skilled tradesman and production worker on the other. Their role in modern scientific and engineering teams is to translate the creative ideas of the engineer and scientist into new processes, machines, and structures. The continuing development of automation and other applications of science to business and industry are increasing the demand for young people with training in the technologies.

The Institute's College of Art offers four-year post-high school courses in each of fine art, advertising art, applied art and crafts, pottery and ceramics and sculpture. The graduate in art may seek either a professional career or purely personal development through art. Because Canada is giving increasing attention to the visual arts, young people with artistic talents and professional training can expect to find rewarding opportunities to contribute to the cultural development of their young country.



A proud feature of the Institute's developing campus is the new eleven story Tower Building. When in full operation, it will accommodate about 2,500 additional students and will also house the new central library. It will permit expansion for five technologies and the introduction of twelve new courses, some of which include Medical Laboratory, Dietary Service, Bio-chemical and Computer Technologies; Graphic Arts and Journalism Administration; Library Arts; Secretarial Arts and Television, Stage and Radio Arts.

Employers need competent tradesmen — highly skilled men and women who use tools and machines and who apply their skills and knowledge to construction, maintenance, and service. The Institute co-operates with the Apprenticeship and Tradesmen's Qualifications Branch of the Alberta Department of Labour in providing formal trade training and education for tradesmen who seek Journeyman status. The Institute also offers some additional trade courses.

The Institute's correspondence instruction division provides home study courses in Mathematics, Power Engineering and Automatic Controls for adults employed in industry.

The evening program offers more than one hundred and fifty courses for adults who wish to increase their knowledge and skills for their present occupations, to take basic instruction for new occupations, and to enrich their use of leisure time.

Calendar of Dates — 1967-68

SUMMER 1967

- June 1** Last day for applications to write Supplemental Examinations in subjects failed prior to the 1966-67 academic year.
- July 14** Last day for applications to write Supplemental Examinations in subjects failed during the 1966-67 academic year.
- August 7** Civic Holiday — Institute closed.
- August 11-18** Supplemental Examinations.
- September 4** Labour Day — Institute closed.

FALL TERM 1967

- September 5** 8:30 a.m. — Registration for
 Aircraft Maintenance Technology 1
 Aircraft Maintenance Technology 2
 Architectural Technology,
 "B" Year (3 year course)
 Drafting Technology, "B" Year (3 year course)
 Manufacturing Technology,
 "B" Year (3 year course)
 Mechanical Design Technology 2
 Power Engineering Technology 1
 Power Engineering Technology 2
- September 6** Registration for Evening Courses begins (see Evening Course Calendar for details).
- September 11** 8:30 a.m. — Registration for
 Chemical Research Technology
 Air Conditioning and Refrigeration Technology
 "A" Year (3 year course)
 Architectural Technology,
 "A" Year (3 year course)
 Drafting Technology, "A" Year (3 year course)
 Electrical Technology, "A" Year (3 year course)
 Electronic Technology, "A" Year (3 year course)
 Manufacturing Technology,
 "A" Year (3 year course)
 Structural Technology, "A" Year (3 year course)
 Telecommunication Technology,
 "A" Year (3 year course)
- September 13** 8:30 a.m. — Registration for
 Commercial Baking 1
 Commercial Cooking 1
 Short Order and Specialty Cooking
 Dietary Service Technology 1
- September 18** 8:30 a.m. — Registration for
 Aeronautical Engineering Technology 1
 Aeronautical Engineering Technology 2
 Aeronautical Engineering Technology 3
 Automotive Service Technology 1
 Automotive Service Technology 2
 Chemical Technology 1
- September 18** 1:00 p.m. — Registration for
 Diesel Mechanics
 Petroleum Technology 1
 Petroleum Technology 2
 Planning Technology (Urban and Regional) 1
 Architectural Technology 1 (2 year course)
 Drafting Technology 1 (2 year course)

- | | | |
|--|--------------------------------|-----------------|
| | Electrical Technology 1 | (2 year course) |
| | Mechanical Design Technology 1 | (2 year course) |
| | Structural Technology 1 | (2 year course) |
| | Surveying Technology 1 | (2 year course) |
- September 19** 8:30 a.m. — Registration for
- | | |
|---|-----------------|
| Biochemical Technology | |
| Chemical Technology 2 | |
| Air Conditioning and Refrigeration Technology | |
| "B" Year | (3 year course) |
| Electrical Technology, "B" Year | (3 year course) |
| Electronic Technology, "B" Year | (3 year course) |
| Structural Technology, "B" Year | (3 year course) |
- September 19** 1:00 p.m. — Registration for
- | | |
|--|-----------------|
| Art 1 | |
| Business Administration 2 | |
| Commercial Cooking 2 | |
| Hotel, Motel and Restaurant Administration 2 | |
| Merchandising Administration 2 | |
| Architectural Technology 2 | (2 year course) |
| Drafting Technology 2 | (2 year course) |
| Electrical Technology 2 | (2 year course) |
| Electronic Technology 2 | (2 year course) |
| Structural Technology 2 | (2 year course) |
| Surveying Technology 2 | (2 year course) |
- September 20** 8:30 a.m. — Registration for
- | | |
|---|-----------------|
| Graphic Arts Administration 1 | |
| Journalism Administration 1 | |
| Library Arts 1 | |
| Medical Laboratory Technology 1 | |
| Television, Stage and Radio Arts 1 | |
| Recreation Facility Technology 1 | |
| Telecommunication Technology, | |
| "C" Year | (3 year course) |
| Air Conditioning and Refrigeration Technology | |
| "C" Year | (3 year course) |
| Architectural Technology "C" Year | (3 year course) |
| Drafting Technology, "C" Year | (3 year course) |
| Electrical Technology, "C" Year | (3 year course) |
| Electronic Technology, "C" Year | (3 year course) |
| Mechanical Technology, "C" Year | (3 year course) |
| Structural Technology, "C" Year | (3 year course) |
- September 20** 1:00 p.m. — Registration for
- | | |
|--------------|--|
| Art 2, 3 & 4 | |
|--------------|--|
- September 22** 8:30 a.m. — General Assembly for all students attending the Institute for the first time.
- October 2** First Quarter in Business Education Courses and Computer Technology begins.
- October 2** 8:30 a.m. — Registration for
- | | |
|--|--|
| Business Administration 1 | |
| Computer Technology 1 | |
| Hotel, Motel and Restaurant Administration 1 | |
| Merchandising Administration 1 | |
| Secretarial Arts 1 | |
- October 5** 9:30 a.m. — Registration for Sewing Crafts.
- October 9** Thanksgiving Day — Institute closed.

October 16	8:30 a.m. — Registration for first course in Dining Room Service.
October 23	8:30 a.m. — Registration for first and second year Agricultural Mechanics
October 27	Awards Day.
December 11	Mid-term examinations begin for all regular Institute courses, except Agricultural Mechanics, Diesel Mechanics, Art and "A" Year.
December 14	Mid-term examinations begin for "A" Year students.
December 15	All courses except those on the Quarter system and "A" year close for the Christmas vacation. First term in Chemical Technology Courses, and Electronic Technology (except "A" year), ends.
December 20	"A" Year closes for the Christmas vacation.
December 22	First Quarter in Business Education courses and Computer Technology ends.
December 25-26	Christmas Holidays — Institute closed.

WINTER TERM 1968

January 1	New Year's Day — Institute closed.
January 2	Institute re-opens for all courses. Second term in Bio-chemical Technology, Chemical Technology, and Electronic Technology begins.
January 3	Second Quarter in Business Education courses and Computer Technology begins.
January 11-12	Mid-term examinations in Agricultural Mechanics 1.
January 18-19	Mid-term examinations in Diesel Mechanics and Agricultural Mechanics 2.
February 28-29	Open House (7 p.m. to 10 p.m.).
March 1	Open House for out-of-Calgary High School students, (9 a.m. to 4 p.m.).
March 1	Second term in Chemical Technology Courses, and Electronic Technology ends.

SPRING TERM 1968

March 4	Registration for third course in Dining Room Service. Third term in Chemical Technology Courses and Electronic Technology begins.
March 21-22	Final Examinations in Agricultural Mechanics.
March 27	Second Quarter in Business Education courses and Computer Technology ends.
April 3	Third Quarter in Business Education courses and Computer Technology begins.
April 12	Good Friday — Institute closed.
April 15	Easter Monday — Institute closed.
May 2-10	Final examinations for all courses.
May 20	Victoria Day — Institute closed.
June 15	Graduation Exercises.
June 26	Third Quarter in Business Education courses and Computer Technology ends.

OFFICE HOURS

8:30 a.m. to 11:45 a.m., 1:00 p.m. to 5:00 p.m., Monday to Friday.

NOTE: Because this calendar is published several months prior to registration, the Institute reserves the right to make whatever changes are required and to cancel any course if the enrolment does not warrant its being offered.

Staff

An alphabetical staff list, with qualifications, is given on page 227

ADMINISTRATION

D. C. Fleming	Principal
G. H. Hare	Academic Vice-Principal
W. E. Jamison	Administrative Vice-Principal
R. H. Jewison	Director of Instruction
J. E. Laird	Bursar
A. J. E. Marguet	Director of Applied Arts
S. E. Overby	Director of Technology and Trades
E. W. Paul	Shop Director
A. J. Roper	Director of Extension

ALLIED SERVICES

A. J. Buttle	Co-ordinator of Student Activities
M. W. Cunningham	Information Officer
Miss E. Dowkes	Duplicating Supervisor
A. E. Gloer	Head Librarian
R. S. Hoagland	Cafeteria Supervisor
G. S. Kaplan	Assistant Director of Instruction
E. A. Mason	Student Counsellor
R. L. Soley	Registrar
L. A. Watson	Chief Storekeeper
N. E. Whittred	Assistant Director of Instruction
G. M. Wood	Art Custodian
G. E. Bagshaw	Canada Manpower Centre Representative
J. Ell	Liaison Officer, Apprenticeship Board
G. E. Walker	Manager, Book Store

INSTRUCTIONAL STAFF

AERONAUTICAL AND MECHANICAL DEPARTMENT

A. R. G. Leckie	Head of Department	
W. C. Duckworth	G. H. Ryning	G. E. Thomas
S. N. Green	G. W. Seale	D. R. Wadia
W. G. Jones	R. E. Stoddart	J. D. Zmurchyk

ALBERTA COLLEGE OF ART

I. H. Kerr	Head of College	
G. Angliss	O. W. Holmsten	J. S. Perrott
G. H. Arnold	L. W. Kristmanson	F. X. Phillips
S. E. Blodgett	J. T. Mattingly	R. J. Spickett
W. Drohan	G. Mihalcheon	K. L. Thomson
J. K. Esler	F. D. Motter	R. E. Ungstad
Miss V. A. Foster	F. Palmer	F. K. Vervoort

AUTOMOTIVE DEPARTMENT

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W. Campbell	N. H. Parson	R. W. Van Duzee
A. Day	G. Preston	D. Wake
A. B. Gordon	R. M. Reid	E. W. Wasden
R. E. Haines		J. R. White

BUSINESS EDUCATION DEPARTMENT

C. A. Harrington	Head of Department	
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C. S. Collie	W. M. Dowan	D. R. Parkin
J. P. Cooper	P. V. Maxwell-Muir	S. H. S. Thompson

CHEMISTRY DEPARTMENT

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L. W. Hollingshead	J. D. S. Shiu
F. E. Johnson	
R. W. Lofthouse	

COMMUNICATION ARTS DEPARTMENT

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J. M. Bell	J. J. Switzer
W. G. Clarke	P. M. Waters
W. M. Dowan	D. G. Whiteley
G. W. Lyttik	H. A. Williamson
C. D. McKenzie	
J. E. Miller	
D. R. Parkin	
G. O. Saunders	

DIESEL DEPARTMENT

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S. Gadeski	J. Smith
K. MacLeod	H. A. Spencer
G. W. Maguire	A. Wallis
D. McIvor	
D. G. Odell	
D. C. Page	
A. Pelle	

DRAFTING DEPARTMENT

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E. R. Bunn	P. Routledge
A. Campbell	Z. Swydneyck
N. J. Coy	H. Tims
L. C. Goode	S. W. Wilson
A. T. Jewell	
F. H. Klingbeil	
R. B. McDonald	
J. D. McGregor	
L. R. McIlveen	

ELECTRICAL DEPARTMENT

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R. A. Brown	E. J. Tickle
M. D. Daunais	W. R. Tinkess
W. G. Duke	E. Wood
R. S. Fisher	
E. W. Forster	
C. J. Hollingworth	
R. J. Kearns	
H. O. Merrick	
A. T. Miller	

ELECTRONICS DEPARTMENT

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W. J. Brook	A. F. Shymanski
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J. K. Clark	A. Stephen
G. S. Coburn	F. W. Stephen
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L. C. A. Gray	J. H. Westlake
J. E. Hopps	
C. M. Johnson	
M. G. Massey-Hicks	
T. Nawata	
J. D. Park	
R. R. Peters	
E. F. Rockafellow	
E. D. W. Schafer	

FOOD SERVICE DEPARTMENT

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J. Hunter	W. Varvazovsky
Mrs. E. Kasarsen	
A. B. Kedves	
Mrs. P. Kirkland	
R. J. Lee	

Eds - Aug 17

MATHEMATICS AND PHYSICS DEPARTMENT

C. W. Brewster	Head of Department
A. Audia	J. K. Myhre
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S. J. Buckley	M. Podgurny
T. J. Collin	C. N. Reed
R. D. Earl	R. M. Smithers
R. W. Erhardt	C. J. Sparks
F. G. Forster	L. R. Tetarenko
D. A. Gaudette	S. J. Wieczorek
P. B. Gislason	G. C. M. Willman
J. Goritz	
B. W. Gowans	
J. D. Jobson	
F. D. Johansson	
W. G. Lancaster	
W. T. MacFarlane	
J. R. Martin	
R. G. Miller	
D. B. Mooney	
J. H. Moore	

METALS DEPARTMENT

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J. R. Archibald	J. M. Minty
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A. W. Bullas	J. M. Parker
H. J. Craigmile	M. F. Procyk
W. M. Ewashen	G. W. Ramsay
T. A. Fitzgerald	W. I. Reid
L. Fryer	J. C. Robertson
A. Gardiner	R. R. Shearer
L. S. Gavel	
A. J. Gregson	
M. Greenhalgh	
F. A. Griffin	
J. D. Harron	
W. Housdorff	
G. Leinweber	
J. H. McKendry	
C. A. Meyer	

PETROLEUM DEPARTMENT

A. P. Workun	Head of Department
A. H. Ellison	
A. A. MacCalder	

POWER ENGINEERING DEPARTMENT

(Correspondence Instruction Division)

J. A. Middleton	Head of Department
W. A. Allan	J. Wolkowski
E. J. Arends	H. Mann
N. Freight	P. N. Obee
H. Johansen	
E. P. Macfarlan	

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SEWING CRAFTS

Mrs. A. R. Davies Mrs. C. E. Pearse

Sily

STRUCTURES DEPARTMENT

M. J. Tomlinson	Head of Department
G. W. Duce	W. J. Reed
H. W. Hiltermann	W. M. Sharp
T. L. Honkala	R. C. Smith
O. W. Jensen	G. Stenstrom
M. E. Larson	
N. T. Markert	
G. T. McTravis	
M. W. Raby	

Trade School - List

Refers to 3 yr. school

1st yr. - 1st

2nd yr. - 2nd

ADMISSION

EDUCATIONAL PREREQUISITES

Admission will be granted to applicants who have at least the prerequisites given after each group of courses below, **subject to the conditions outlined in the regulations given on page 22 and 23**, and to the enrolment limits established for each course. Applicants educated in other provinces and countries should refer to the information on pages 20 and 23.

A. INSTITUTE OF TECHNOLOGY DIVISION:

GROUP 1.

- (a) Aeronautical Engineering Technology (3 years)
- Computer Technology (2 years)
- Mechanical Design Technology (2 years)
- Petroleum Technology (2 years)
- Planning Technology (Urban and Regional) (2 years)
- Power Engineering Technology (2 years)
- Surveying Technology (2 years)

Minimum Prerequisites: An Alberta High School Diploma with a "B" standing in Mathematics 30 or 32 (or a combined average of Mathematics 30 and 31) and credit in Physics 30 or 32.

- (b) Biochemical Technology (2 years)
- Chemical Technology (2 years)
- Chemical Operations Technology (2 years)
- Chemical Research Technology (2 years)

Minimum Prerequisites: An Alberta High School Diploma with a "B" standing in Mathematics 30 or 32 (or a combined average of Mathematics 30 and 31) and a credit in Chemistry 30 (Physics 30 or 32 is desirable but not mandatory). NOTE: In 1968, a "B" standing in Chemistry 30 will be required for these courses.

It is recommended that students planning to pursue the Chemical Operations Technology course have at least a "B" standing in Physics 30 or 32 (will be offered beginning September 1968).

- (c) Medical Laboratory Technology (2 years)

Minimum Prerequisites: An Alberta Senior Matriculation Diploma (University Entrance) with an overall average of 60%, including English 30, Social Studies 30, Mathematics 30, Chemistry 30 and Physics 30 or Biology 30, or equivalent.
(Selections are made by the hospitals.)

- (d) Recreation Facility Technology (2 years)

Minimum Prerequisites: An Alberta High School Diploma with a "B" standing in Mathematics 20 or 22 and Science 20 or 22.


GROUP 2.

- (a) Architectural Technology (2 years)
- Drafting Technology (2 years)
- Electrical Technology (2 years)

Minimum Prerequisites: 100 Alberta High School credits including a "B" standing in Mathematics 30 or 32 (or a combined average of Mathematics 30 and 31), Science 20 or 22 and including 5 or more credits in Grade XI English with a "B" standing.

- (b) Structural Technology (2 years)

Minimum Prerequisites: 100 Alberta High School credits including a "B" standing in Mathematics 20 or 22, Science 20 or 22, and

Needle - Central Trade School
Commercial - United Senior Trade School 
including 5 or more credits in Grade XI English with a "B" standing.

GROUP 3. (Courses Articulated with Alberta Vocational High Schools).

Air Conditioning and Refrigeration Technology	(3 years)
Architectural Technology	(3 years)
Drafting Technology	(3 years)
Electrical Technology <i>Red Deer</i>	(3 years)
Electronic Technology	(3 years)
Manufacturing Technology <i>St. John's</i>	(3 years)
Structural Technology	(3 years)
Telecommunication Technology	(3 years)

Minimum Prerequisites: 67 Alberta High School credits with a "B" standing in Mathematics 20 or 22, Science 20 or 22, and including 5 or more credits in Grade XI English with at least a "B" standing, are required for admission to "A" year (first year).
NOTE: Priority for entry into "A" year will be given to students from school districts where the industrial vocational program is not available. Students attending schools in districts where the relevant vocational program is offered will be expected to prepare themselves for direct entry into "B" year.

ADVANCED STANDING: Students with an Alberta High School Diploma with at least a "B" standing in Mathematics 30 or 32 (or a combined average of Mathematics 30 and 31), 35 or more credits in one of the articulated Vocational High School subjects with at least a "B" standing in the final year, and credit in Physics 30 or 32, are eligible for admission to "B" year (second year) of the articulated technology.

Students who are proceeding to "B" Year from "A" Year in one of the Institutes of Technology or Junior Colleges should note that they must fulfil all requirements outlined on p. 24 and 25 regarding failures and supplemental examinations in order to qualify for "B" year.

NOTE: For articulated technologies priority of entry will be given to qualified "B" Year applicants. Applicants from the first year of the two year program in the corresponding articulated technology will be accepted as long as accommodation is available. It is expected that the year 1 and 2 programs will be terminated at some future date.

Lacrosse, Zeebe - Indian -
GROUP 4.

- (a) Aircraft Maintenance Technology (2 years)

Minimum Prerequisites: 67 Alberta High School credits with a "B" standing in Mathematics 20 or 22, Science 20 or 22, and including 5 or more credits in Grade XI English with a "B" standing.

- (b) Automotive Service Technology (2 years)

Minimum Prerequisites: 67 Alberta High School credits with credit standing in Mathematics 20 or 22, Science 20 or 22, and including 5 or more credits in Grade XI English.

- (c) Dietary Service Technology (2 years)

Minimum Prerequisites: 67 Alberta High School credits with a "B" standing in Mathematics 20 or 22 or Mathematics 21 (revised) and including 5 or more credits in Grade XI English with a "B" standing.

B. CULTURAL DIVISION (Alberta College of Art):

Advertising Art	(4 years)
Applied Art and General Crafts	(4 years)
Fine Art	(4 years)
Fine Art Sculpture	(4 years)
Pottery and Ceramics	(4 years)

Prerequisites: 67 Alberta High School credits with at least a "B" standing in one of Social Studies 20, Geography 20 or Sociology 20, and including 5 credits in Grade XI English with at least a "B" standing, preferably including Literature 20 or Literature 21 or Language 21.

C. APPLIED ARTS DIVISION

- (a) Business Administration (2 years)
 Merchandising Administration (2 years)
 Minimum Prerequisites: An Alberta High School Diploma with a "B" standing in Mathematics 20 or 22, or Mathematics 21 (revised) completed in June, 1966 or later.

NOTE: Commencing in 1968 a B standing in English 30 or 33 will be required for Business Administration.

- (b) Hotel, Motel and Restaurant Administration (2 years)
 Minimum Prerequisites: An Alberta High School Diploma.
- (c) Journalism Administration (2 years)
 *Secretarial Arts (2 years)
 Television, Stage and Radio Arts (2 years)
 Minimum Prerequisites: An Alberta High School Diploma with a "B" standing in English 30 or 33.
- (d) Library Arts (2 years)
 Minimum Prerequisites: An Alberta High School Diploma with a "B" standing in English 30 or 33 and Social Studies 30, or equivalent.
- (e) Graphic Arts Administration (2 years)
 Minimum Prerequisites: An Alberta High School Diploma with credit in Mathematics 30 or 32 (or a combined average of Mathematics 30 and 31), and Science 20 or 22.
 *For information re advanced standing 1968-69, see page 96.

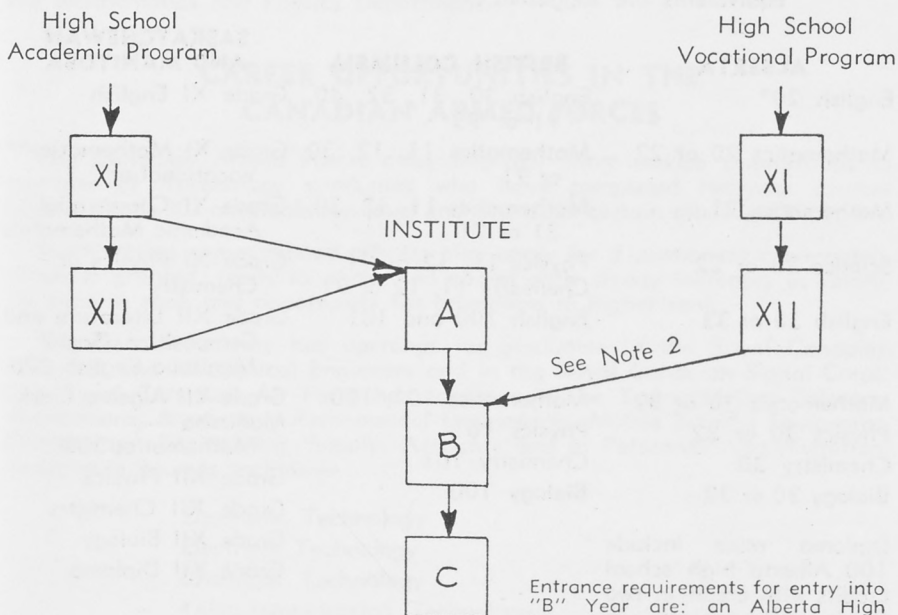
D. TRADE DIVISION

- (a) Commercial Cooking (2 years)
 Minimum Prerequisites: 35 Alberta High School credits. (Note: 67 Alberta High School credits will be required beginning in September, 1968).
- (b) Commercial Baking (2 years)
 Preference will be given to those applicants having 67 Alberta High School credits. (Note: 67 Alberta High School credits will be required beginning in September, 1968).
- (c) Short Order and Specialty Cooking (1 year)
 Minimum Prerequisites: 35 Alberta High School credits.
- (d) Agricultural Mechanics (2 years)
 Diesel Mechanics (1 year)
 Minimum Prerequisites: Mathematics 10, 12 or 14 and Science 10, 12 or 14 of the Alberta High School Program.

- (e) Dining Room Service (9 weeks)
Welding (3 or 6 weeks)
Minimum Prerequisites: Although no educational prerequisites are specified, applicants are expected to have a sufficient knowledge of English to enable them to take class notes and write examinations.
- (f) A special non-trade course in Sewing Crafts is offered. The course includes 25 weeks' instruction in each of Basic, Intermediate and Advanced Dressmaking. No special educational prerequisites are specified, but some talent together with a desire to learn are essential.
- (g) Apprentice training: available only to apprentices who are registered with the Apprenticeship Board of the Department of Labour. Information is obtainable only from the Director of Apprenticeship, Department of Labour, Edmonton, Alberta, or from the Calgary office of the apprenticeship board (telephone 263-3489).

IMPORTANT STATEMENT CONCERNING THE ENTRANCE REQUIREMENTS TO THE ARTICULATED TECHNOLOGIES

A new relationship became effective September, 1965, between certain industrial vocational programs offered in Alberta High Schools and their related technologies offered at The Southern Alberta Institute of Technology. Details are as follows:



Entrance requirements for "A" Year are: 67 Alberta High School credits with at least a "B" standing in Mathematics 20 or 22, Science 20 or 22, and five credits in grade XI English, or equivalent with at least a "B" standing.

Entrance requirements for entry into "B" Year are: an Alberta High School Diploma with at least a "B" standing in Mathematics 30 or 32 (or a combined average of Mathematics 30 and 31), 35 or more credits in one of the articulated Vocational High School subjects (see Note 1 below) with at least a "B" standing in the final year, and credit in Physics 30 or 32, OR successful completion of "A" Year (see Note 2 below).

Note 1. This route applies to the following Vocational High School programs and Institute technologies:

From this High School Voc. Program to the Second Year ("B" Year) in this Institute Program.

Electricity 12, 22, and 32 — Electrical Technology OR *Air Conditioning and Refrigeration Technology.

*1967-68 is the last year for entrance into "A" year of Air Conditioning and Refrigeration Technology. This program is terminating.

Drafting 12, 22, and 32 — Architectural Technology or Drafting Technology.

Carpentry 12, 22, and 32 — Structural Technology.

Machine Shop 12, 22, and 32 — Manufacturing Technology.

Electronics 12, 22, and 32 — Electronic Technology or Telecommunication Technology.

Note 2. Priority for entry into "A" Year will be given to students from schools where the industrial vocational program is not available. Students attending schools where the relevant vocational program is offered will be expected to prepare themselves for direct entry into "B" Year.

PRE-REQUISITE EQUIVALENTS

For the benefit of those applicants who were educated in British Columbia, Saskatchewan or Manitoba, the following approximate equivalents are suggested.

ALBERTA	BRITISH COLUMBIA	SASKATCHEWAN AND MANITOBA
English 20*	English 30, 31, 32, 40, 91 or 93	Grade XI English
Mathematics 20 or 22	Mathematics 11, 12, 30 or 91	Grade XI Mathematics** Vocational or
Mathematics 21	Mathematics 11, 12, 30, 31 or 91	Grade XI Commercial, Academic Mathematics
Science 20 or 22	Physics 11, 12 or 91 Chemistry 11, 12 or 91	Grade XI Physics or Chemistry
English 30 or 33	English 100 and 101	Grade XII Literature and Composition (Sask) Manitoba English 300
Mathematics 30 or 32	Mathematics 101, 120	Grade XII Algebra (Sask.)
Physics 30 or 32	Physics 101	Manitoba —
Chemistry 30	Chemistry 101	Mathematics 300
Biology 30 or 32	Biology 100	Grade XII Physics Grade XII Chemistry Grade XII Biology Grade XII Diploma
Diploma must include 100 Alberta high school credits with credit in two Grade XII subjects in addition to English 30 or 33.		
Grade XII Senior Matriculation	Grade XIII Senior Matriculation	Grade XII Senior Matriculation

*This course includes both Language and Literature.

**These courses must include both Algebra and Geometry.

QUARTER SYSTEM

The Business Education Department will begin to operate on a quarter system beginning in the fall of 1967. (First year courses only). Each quarter is of twelve weeks duration and the school year is divided into three quarters. Examinations are held at the end of each quarter.

The quarter system will enable the Institute to have an intake of students in April 1968, in limited numbers and in specified courses. For further information contact the Registrar.

EXTRA COURSES IN COMPUTING AND MATHEMATICS

The Mathematics and Physics Department will offer some short courses by programmed instruction during 1967-68 on a trial basis. These courses are primarily for the benefit of students with a credit in the Mathematics and Physics courses of their current year, (i.e. "A" year students who have established credits through the Director of Technology and Trades in Grade 12 Mathematics and Physics.) Although other students may apply for these courses, those students carrying a full load are not encouraged to take them. Included are Computing courses in FORTRAN and Assembler Language programming for the IBM 1800 Computer and Mathematics courses in Calculus, Trigonometry, and Algebra, plus Introduction to Sets. The self-study Programmed Instruction will be supplemented by weekly tutorials or laboratories where possible, and provision will be made for computer time for students studying programming. These courses are strictly an extra for students and no credit toward the student's diploma programme can be expected. Students will purchase their own texts for these courses and will register for the courses with the Mathematics and Physics Department.

CAREER OPPORTUNITIES IN THE CANADIAN ARMED FORCES

The Canadian Armed Forces offer five-year short service commissions to Institute of Technology graduates who have completed two-year courses beyond Grade XII matriculation level and who meet certain other qualifications.

Short service commissioned officers may apply for a permanent commission, which if granted, leads to a planned career with steady increases in salary, for time in rank and opportunity for promotion to higher rank.

The Canadian Army has openings for graduates in the Royal Canadian Electrical and Mechanical Engineers and in the Royal Canadian Signal Corps. The Royal Canadian Air Force has openings in the Technical list; Telecommunications, Armament, Aeronautical Engineering, Mobile Support Equipment, Construction Engineering, Supply, Accounts and in Personnel Administration. Acceptable courses include—

- Electronic Technology
- Electrical Technology
- Chemical Technology
- Telecommunication Technology
- Aeronautical Engineering Technology
- Mechanical Technology
- Architectural Technology

Graduates may also apply for aircrew training with the RCAF and RCN. All applicants for commissions will be considered on an individual basis. For further information contact the Canadian Forces Recruiting Centre at 115 - 8 Avenue S.W., Calgary, phone 269-6736.

GENERAL INFORMATION

Information regarding courses offered, prerequisites and admission, may be obtained from the Registrar. Write, visit or telephone 289-4916.

Counselling may be arranged with the Student Counselling Services. Write, visit or telephone 289-5667.

ADMISSION PROCEDURE

After the number of accepted applicants has reached the maximum number that can be accommodated in a course, further applications will be held on a waiting list. As cancellations occur among accepted applicants, qualified waiting applicants will be considered for the vacancies on the basis of their academic standing, with preference being given to those with the highest qualifications.

Prospective students are urged to submit applications and statements of High School results well in advance of course opening dates to avoid disappointment. However, no application should be submitted before January 1st of the year in which admission is desired.

Each application must be accompanied by the \$5.00 registration fee. Statements of results for each year of High School completed must be submitted before acceptance can be considered. Applicants who lack part of the prerequisites will be considered for acceptance only if the course desired is not filled on Registration Day. However, in any course, the Institute reserves the right to accept only those applicants who appear to have the capabilities necessary for success in the course.

Each accepted applicant must be at the Institute on the Registration Day for his course or clarify his intentions by telephone, letter or wire before noon of the Registration Day; otherwise his place in the course may be given to another applicant. All applicants must be at least 16 years of age.

Applicants 21 years of age and over who lack some of the entrance prerequisites may receive special consideration of their qualifications at the discretion of the Registrar.

Prospective applicants from other provinces who are not certain of their qualifications, in Alberta terms, should submit official statements or photostatic copies of high school results to the Registrar before making application for courses.

Prospective overseas applicants should write the Registrar by airmail and clearly list their secondary school subjects, standings and marks.

Overseas applications must be submitted by June 1st.

The Institute reserves the right to cancel any course if the enrolment does not warrant its being offered.

HIGH SCHOOL DIPLOMA: An Alberta student who has the minimum educational prerequisites and who enrolls in "A" year of any one of the articulated three-year courses listed in Group 3 on page 17, will automatically receive a high school diploma on successful completion of "A" year, provided the other requirements for a diploma have been met. The full requirements for an Alberta high school diploma are as follows: 100 credits with at least 15 credits in English, including 5 in English 10 and 5 in English 30 or 33; at least 10 credits in Social Studies, including 5 in Social Studies 10; at least 2 credits in Physical Education 10; credit in at least one Mathematics course, at least one Science course, and at least two Grade XII subjects in addition to English 30 or 33.

PAYMENT OF FEES: A registration fee of \$5.00 must accompany each application for admission. Tuition fees are payable at the time the student enters the Institute on Registration Day. Payment of fees in advance of the opening date is not desired. The amount of the fees for the various lengths of courses will be found on page 32.

REFUND OF TUITION FEES, LABORATORY FEES AND STUDENTS' ASSOCIATION FEE: A student who voluntarily withdraws from a day course may receive a refund of his fees. The refund will be a percentage based on the period of enrolment. The period of enrolment will be the inclusive calendar days counted from the day the student officially commenced a course until the date of withdrawal. A student who is requested to withdraw from a course because of discipline automatically forfeits any right to a refund.

STUDENT COUNSELLING SERVICES:

Proper counselling is recognized as an important part of choosing a vocation and prospective students are invited to avail themselves of this service anytime. All new students are encouraged to have a counselling interview before registering. The Student Counselling Office is open throughout the year including the summer months and no fee is charged for any of the services provided. Beginning in 1967 the office will also be open at least one evening during the week.

The Counselling Office offers an opportunity to discuss freely, in a confidential and professional setting, any problem, whether it be difficulty in studying, worrying about examinations, problems of social or family relation-

ships, difficulties concerning vocational choice, feelings of tension or depression, or a general loss of interest and sense of dissatisfaction. Problems of this kind are common among students, but students need not be resigned to them or continue without solving them.

The emphasis is on helping students to understand themselves better, helping them to increase their ability to set realistic goals, and helping them choose the most effective means of attaining these goals. Measures of ability and interest or other psychological tests are sometimes used as aids to self-understanding and career planning. Also available is a comprehensive collection of vocational and educational information including calendars from all major Canadian and United States Technical Institutes and Universities, employment information, study aids and remedial courses to help the student succeed in his chosen career.

DIPLOMAS AND CERTIFICATES:

Graduates of most of the two and three year post-high school diploma courses at the Southern Alberta Institute of Technology qualify for the Canada-wide designation of either Diploma of Technology or Diploma of Applied Arts.

The Institute will issue a diploma to a student who has passed all subjects of a regular course of at least two years' duration, and who has regularly attended all classes and laboratory or shop periods.

An honors diploma will be awarded to a student who meets the attendance requirements and who obtains an average standing of 80% in each year of the course with not less than 70% in any subject. When a course is of more than two years' duration, the last two years will be the basis for the honors diploma, provided there was no failure in any subject in a prior year. However, the attendance factor is based on all years of the course. (See page 26 for attendance regulations).

Any student who writes one or more supplemental examinations cannot qualify for an honors diploma.

A student from another educational institution, who obtains credit for some part of the course taken cannot qualify for an honors diploma.

A certificate will be issued to a student who successfully completes any course of less than two years' duration, and who has regularly attended all classes and laboratory or shop periods.

A diploma may be replaced on payment of a fee of \$3.00 accompanied by a written request signed by the graduate.

Additional transcripts of marks will be issued on payment of a fee of \$1.00 each.

PASS MARK:

The pass mark in most subjects is 50%.

FAILURES:

- (a) A student who fails in subjects whose combined hours EXCEED ONE-THIRD of the total hours for the year is considered to have failed the year, and will not be permitted to attempt supplemental examinations.
- (b) A student who fails the year may be permitted to repeat provided he has obtained a pass mark in subjects whose combined hours ARE EQUAL TO OR EXCEED ONE-HALF of the total hours for the year, and provided the year he wishes to repeat is not fully enrolled with qualified students.

- (c) A student who fails in subjects whose combined hours are EQUAL TO OR LESS THAN ONE-THIRD of the total hours for the year will have the privilege of writing supplemental examinations.

SUPPLEMENTAL EXAMINATIONS:

- (a) A student who fails supplemental examinations in subjects whose combined hours EXCEED ONE-FIFTH of the total hours for the year is considered to have failed the year, but may be permitted to repeat, provided the year he wishes to repeat is not fully enrolled with qualified students.
- (b) A student who fails supplemental examinations in subjects whose combined hours ARE EQUAL TO OR LESS THAN ONE-FIFTH of the total hours for the year may be admitted into the next year, but will be placed on probation until the results of the Christmas or mid-term examinations are known. If these results are considered unsatisfactory, such a student may be asked to withdraw.
- (c) A student who is not in his final year and fails in any subject, and does not write the supplemental examination will be rated according to paragraph (a) or (b) above.

The conditions under FAILURES and SUPPLEMENTAL EXAMINATIONS may be waived, only in very exceptional circumstances, at the discretion of the student's Department Head.

APPLICATIONS:

- (1) Applications to write supplemental examinations in August, 1967, in subjects failed in the 1966-67 academic year MUST BE SUBMITTED BEFORE JULY 15th, 1967.
- (2) Applications to write supplemental examinations in August 1967 in subjects failed before the 1966-67 academic year MUST BE SUBMITTED BEFORE JUNE 1st, 1967.
- (3) A fee of \$3.00 per examination must accompany each application. Refund of fee will be made in the event of cancellation of the application only if the applicant has notified the Registrar in writing of such cancellation, prior to August 1st.

Students writing supplemental examinations in August may do so at any approved Supplemental Examination Centre. Details on location of centres, dates of examinations, etc., will be forwarded to each student who applies for supplemental examinations.

Students who are located outside of Alberta during the summer may make special arrangements with the Registrar to write supplemental examinations without returning to Alberta.

Supplemental examinations are based on all material covered during the year. In a subject where term work is part of the final rating, the term mark will be the same percentage of the supplemental rating.

Students will not be permitted to write supplemental examinations after the supplemental examination dates of the fourth year following graduation of the class. Examinations will be based on current subject content. If the subject has been discontinued, the supplemental examination will be based on subject material covered during the year of the student's attendance.

A student wishing to complete requirements for his diploma, after expiration of the period in which he is permitted to write supplemental examinations, will be required to repeat the subject or subjects still outstanding, provided

that, if a subject has been discontinued, the student may be permitted to take a subject or subjects in the current course outline at the discretion of the Department Head.

APPEALS: A final examination may be re-read if a written request and a \$5.00 fee are submitted to the Bursar within thirty days after results are mailed to students. The fee will be refunded in full if, as a result of the re-reading, a passing mark is obtained in place of a failure. Students are urged to refrain from seeking reappraisals unless they have good reason to believe a mistake has been made.

EQUIPMENT AND TOOLS: While the Institute provides all machine tools and special equipment, students in the various courses are required to provide their own hand tools, drafting instruments, laboratory or protective clothing, textbooks, etc. **Students are advised not to purchase this equipment until after registration and receipt of an authorized list.**

ATTENDANCE: Day classes are held at the Institute five days per week throughout the school year.

Students are expected to attend punctually all lecture, laboratory and shop classes in their courses; otherwise, the periods of training will be deemed incomplete and diplomas or certificates may be withheld.

Students are not entitled to be absent from classes. It is realized, however, that illness or other serious circumstances may cause a student to be absent. Allowance for such absences will be made, but only to a maximum of 10% of the total course time.

A student who is absent for more than 10% of the total course time due to major illness or other serious circumstances may apply for special consideration by presenting a written request, supported by documentary evidence, to the Academic Vice-Principal.

Any student who is persistently late or wilfully absents himself from class may be suspended. **If a student's progress becomes unsatisfactory, he may be barred from participation in extra-curricular activities.**

Students must attend all classes in related work in the department in which they enrol unless other arrangements have been made with the subject Department Head **at the beginning of the year.**

In addition to the work done in class hours each student is expected to devote a minimum of ten hours per week to home study. This time should be planned so as to do justice to all the subjects of the course.

CONDUCT AND DISCIPLINE:

Any student whose ability to profit by a selected course is shown to be inadequate, or whose conduct is not in the best interests of the Institute, or whose diligence is such that he will make a failure of his year, may be asked to leave at any time. In such a case no portion of the fee other than the tool deposit will be refundable.

All students are expected to conduct themselves in a manner conducive to the development of good school spirit and in the best interests of the Institute. This statement is meant to be interpreted in the broadest possible sense and is directly applicable to students participating in field trips and to students who represent the Institute as members of athletic teams or other competitive groups performing on or off campus, both during the course of the competitions and during the intervening periods at commercial lodgings or on vehicles chartered or private. Students failing to adhere to this regulation will be subject to suspension or expulsion from the Institute.

Defacement of buildings and wilful damage to equipment are considered serious offences.

On all Institute premises and at all functions at which the Institute is a participant, the consumption of alcoholic beverages and gambling are prohibited. This regulation also applies to Institute-sponsored groups in vehicles and to students who arrive at the Institute or an Institute-sponsored function under the influence of alcohol consumed elsewhere.

Violators of this regulation will be suspended or expelled.

Suspension and reasons for such action will be recorded on the Student Permanent Record Card.

STUDENT DRESS: As part of the preparation for employment in business and industry, all students are required to dress in a neat and presentable manner.

Male students should wear shirts and ties with either suits or sports jackets and trousers.

Female students should wear dresses, suits or skirts with blouses or sweaters.

Departments that require protective clothing, such as laboratory coats or smocks, will inform students of the regulations for such clothing at the time of enrolment.

Laboratory coats, etc., should be laundered regularly and repaired or replaced when necessary. Such clothing can be purchased from the Institute stores at reasonable prices.

STUDENT PLACEMENT:

The Department of Manpower and Immigration, through its Canada Manpower Centres, operates on-campus Student Placement Services at various Institutes of Technology across Canada.

Its office at the Southern Alberta Institute of Technology is located in the Main Building. It co-ordinates all recruiting of technology graduates carried out by employers for their Canadian operations. Current information on career opportunities is readily available and those students seeking part-time and summer employment are also given assistance.

Students are encouraged to take advantage of these services by contacting the office early in the academic year. Hours are 8:30 a.m. to 5:00 p.m. daily.

THE ALBERTA SOCIETY OF ENGINEERING TECHNOLOGISTS: Graduates of any of the Institute's engineering, geological or geophysical technologies may qualify for membership in the Alberta Society of Engineering Technologists after completing a minimum of two years of acceptable experience in their particular technologies. The following are the categories of Membership: Engineering Technician; Senior Engineering Technician; Engineering Technologist; Senior Engineering Technologist.

Also pending completion of the required experience, such graduates are eligible for recording with the Society as "Technologist Trainees" and will be allowed to attend all Society meetings, receive all Society mailings, etc.

Information is available from the Alberta Society of Engineering Technologists at 1102 Empire Building, Edmonton, Alberta.

OPEN HOUSE: The Institute plans to conduct its annual "Open House" on the evenings of Wednesday, February 28 and Thursday, February 29, 1968. The general public and Calgary High School students are cordially invited to attend and inspect the Institute laboratories and classes in operation on these evenings.

Out-of-town High School students may visit the Institute on Friday, March 1, from 9:00 a.m. to 4:00 p.m.

INSURANCE: At the time of registration, students pay an insurance fee entitling them to coverage against accidental injury while engaged in Institute-sponsored activities, as follows: reimbursement for expenses of medical treatment, surgical treatment, hospital confinement or other incidental expenses up to \$750 in excess of the first \$10.00. The cost of accidental injury to sound natural teeth is included up to an amount of \$150 in excess of the first \$10.00. This insurance does not apply to apprentices, who are covered under the Workmen's Compensation Act.

It should be noted that the Institute cannot be held responsible for any injuries arising from unsupervised student activities.

EXTRACURRICULAR ACTIVITIES: The extracurricular program is centered in the Student Activities Building on the northeast corner of the campus. Located in this building are extensive athletic facilities, a multi-purpose recreation area, a well-equipped photography room, and Amateur Radio Station VE6ANR. Elsewhere on the campus are bowling alleys and a rifle and pistol range. Although intramural and recreational athletics are stressed, there are opportunities for the advanced performer in some sports to compete at the inter-collegiate level.

The Institute's program of extra-curricular activities is sufficiently diversified to provide the student with opportunities for the pursuit of established interests and the development of new interests, whether these be athletic, musical, literary or social. Opportunities for the student to exercise his creative capacities are afforded through the two major student publications, *Emery Weal* and *ON SAIT*. Musical, vocal or dramatic talents find outlets in the Choral Society and Drama Club. The many councils and committees through which the affairs of the Students' Association are conducted provide excellent media for training in the proper conduct of meetings.

All extra-curricular activities directly or indirectly come under the jurisdiction of the Students' Association. Each student automatically becomes a member of the Association upon registration. Each year several students become recipients of awards presented by the Association in recognition of outstanding contributions in one or more activities.

The Departmental Club is a driving force in campus affairs. Although membership is not compulsory, it behooves the student to join his departmental club. The ongoing programs of these groups include regular technical meetings, often featuring guest speakers from industry. Some departmental clubs are associated with national professional organizations.

Students are reminded to pace themselves carefully in their extra-curricular load. If unsatisfactory academic progress is considered to be the result of excessive participation in extracurricular activities, the student may be barred from all or a portion of these activities, at the discretion of his or her Department Head.

CHAPLAIN SERVICE: Any student wishing to make an appointment with one of the Campus Chaplains, should do so through the Co-ordinator of Student Activities.



APPRENTICESHIP TRAINING COURSES

(Offered to Registered Apprentices in Alberta only)

APPRENTICESHIP: The Apprenticeship Program leading to Journeyman status in a number of designated trades, presently 27 in number, is under the direction of the Provincial Apprenticeship Board.

Apprenticeship is a method, a way of learning and acquiring a body of skills; it is training on the job supplemented by technical training courses taken at one of the Alberta Institutes of Technology, Calgary or Edmonton. Candidates for training must be properly indentured, with Apprenticeship Contracts duly registered and approved by the Director of Apprenticeship, Department of Labour, Edmonton.

INSTITUTE OF TECHNOLOGY ATTENDANCE: Apprentices under contract are required and privileged to attend trade training courses designed for their particular trades. These are short courses of four to twelve weeks in each year of apprenticeship. Fees are not charged for these courses. A nominal subsistence allowance is paid to apprentices by the Apprenticeship Board while taking the courses.

Over 4,800 apprentices from the designated trades listed below attended trade courses at the Alberta Institutes of Technology during the 1966-67 term.

APPRENTICESHIP TRADES IN ALBERTA: Some details relative to Apprenticeship in the designated trades in Alberta are given in the following table:

Trade	Length of Apprenticeship (Years)	School Training Program (Weeks Per Year)	Minimum Education (Grade)
Bricklayer	4	8-8-8	9
Carpenter	4	8-8-8-8	9
Construction Electrician	4	8-8-8-12	10
Power Electrician	4	8-8-8-8	10
Communication Electrician	4	8-8-8-8	10
Painter and Decorator	4	6-6-6-6	9
Plasterer	4	6-6-6	9
Plumber	4	6-6-6-6	9
Steamfitter	4	6-6-6-6	9
Gasfitter	3	3-0-3	9
Motor Mechanic	4	8-8-6-6	9
Auto Body Mechanic	4	5-5-5-4	9
Sheet Metal Mechanic	4	10-8-6-8	9
Welder	3	6-6-4	9
Radio and Television Technician	4	8-8-8-8	10
Refrigeration Mechanic	4	8-8-8-8	9
Machinist	4	8-8-8-8	10
Millwright	4	- - -	9
Lather	3	4-4-4	9
Cook	3	8-8-8	8
Heavy Duty Mechanic	4	8-8-6-6	9
Tile Setter	4	4-4-4	9
Appliance Serviceman	4	6-6-6-6	10
Baker	3	8-8-8	10
Glassworker	4	6-6-6-6	10
Ironworker	4	6-6-6-6	10
Partsman	3	8-6-6	10
Roofer	3	6-6-6	9

**APPRENTICESHIP COURSES OFFERED AT ALBERTA INSTITUTES OF
TECHNOLOGY 1967-68
OFFERED AT BOTH NORTHERN AND SOUTHERN INSTITUTES**

Carpenter	First, second, third and fourth year
Construction Electrician	First, second, third and fourth year
Plumber	First, second, third and fourth year
Motor Mechanic	First, second, third and fourth year
Auto Body Mechanic	First, second, third and fourth year
Sheet Metal Mechanic	First, second, third and fourth year
Welder	First, second and third year
Radio and Television Technician	First, second, third and fourth year
Machinist	First, second, third and fourth year
Cook	First, second and third year

Heavy Duty Mechanic	First, second, third and fourth year
Appliance Serviceman	First and second year
Partsman	First and second year

OFFERED AT SOUTHERN ALBERTA INSTITUTE ONLY

Communication Electrician	First and second year
Refrigeration Mechanic	First, second, third and fourth year
Glass Worker	First and second year
Ironworker	First and second year
Roofer	First year

OFFERED AT NORTHERN ALBERTA INSTITUTE ONLY

Baker	First, second and third year
Bricklayer	Basic, Intermediate, and Senior
Power Electrician	First, second, third and fourth year
Painter and Decorator	First, second, third and fourth year
Plasterer	First, second and third year
Steamfitter	Basic, Intermediate, and Senior
Gasfitter	Basic and Senior
Lather	First, second and third year
Tile Setter	Basic, Intermediate, and Senior

COURSES OF TRAINING: Course outlines are sent to the Institutes by the Provincial Apprenticeship Board. They are in harmony with the Dominion Trade Analyses and are approved by the Provincial Trade Advisory Committees. Revisions to the outlines are made from time to time in keeping with current trade practices. Institute staff members participate in writing and revising outlines.

STANDARDS: Achievement by apprentices attending Institute courses is measured by weekly, mid-term or final tests as required for the particular subject. Record is kept of laboratory or shop work. Committees of Instructors meet to assess general progress made.

In addition to the Institute evaluation, apprentices write external examinations administered by the Provincial Apprenticeship Board. Tradesmen's Qualification examinations are given at the termination of the final year of training. In certain trades it is now possible for graduating apprentices to qualify, through examination, for the Interprovincial Standards Red Seal.

CERTIFICATES: Certificates are issued by the office of the Director of Apprenticeship after the apprentice has successfully completed his course work and his indenture period. Depending on whether the trade is designated under the Apprenticeship and Tradesmen's Qualification Acts, the apprentice becomes eligible for:

- a) The Completion of Apprenticeship Certificate,
- b) The Certificate of Qualification or the Certificate of Proficiency.

The Interprovincial Red Seal, if awarded, is placed on the Completion of Apprenticeship Certificate.

Information relative to the Apprenticeship Program may be obtained at one of the Apprenticeship Board Offices:

Terrace Building — Edmonton,
 Provincial Building — Calgary,
 Administration Building — Lethbridge
 Provincial Building — Grande Prairie,
 Provincial Building — Red Deer.

COSTS

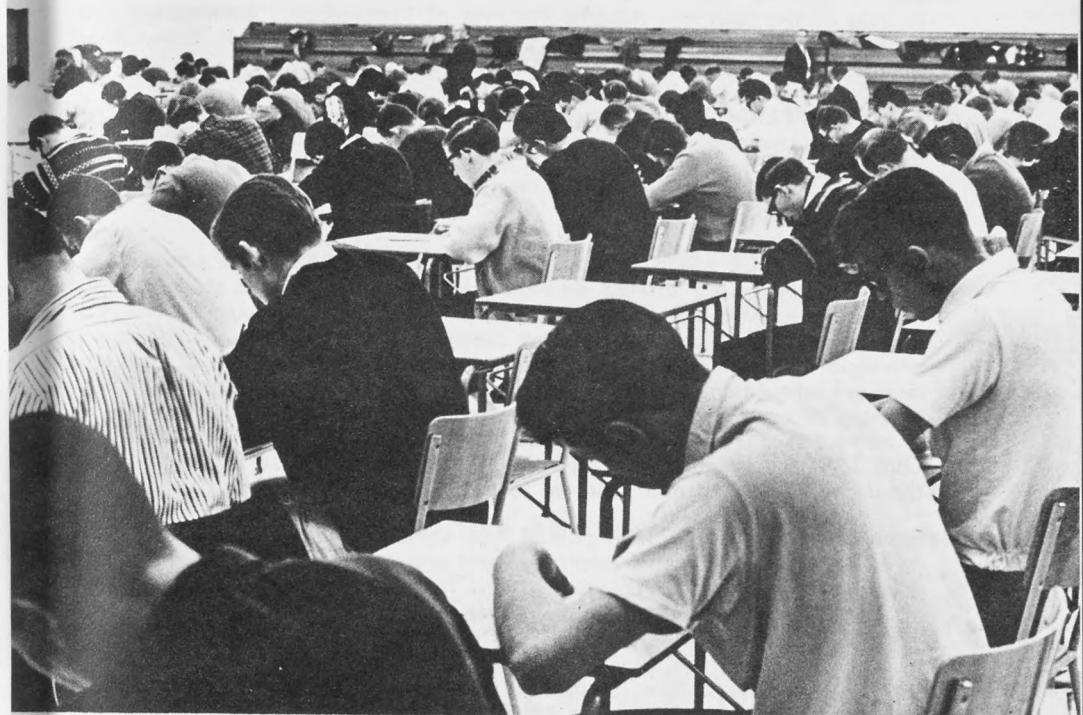
The Institute is operated by the Alberta Department of Education and is financed by the Provincial and Federal governments. Tuition fees cover only a small portion of operating cost which is about \$1,000 per student per year.

FEES: A registration fee of \$5.00 is payable when application is made for all Day Courses. **This fee is not refundable if the applicant has been accepted for admission.**

	Regular Day Courses over 8 months in any school year	Regular Day Courses over 10 weeks but not exceeding 8 months	Short Day Courses 10 weeks or less/or 300 hours or less	Welding — Three weeks	Welding — Six weeks
Registration fee	\$ 5.00	\$ 5.00	\$ 5.00	\$ 5.00	\$ 5.00
Tuition	40.00*	25.00*	13.00	43.00	86.00
Tool deposit	5.00	5.00	5.00	5.00	5.00
Laboratory or Shop fee	5.00	5.00	2.00	2.00	2.00
Students' Association	24.00	24.00	2.00	2.00	2.00
Insurance	1.00	1.00	1.00	1.00	1.00
TOTAL	\$80.00	\$65.00	\$28.00	\$58.00	\$101.00

NOTE: Students authorized to repeat a quarter must pay the sum of \$28.00.

NOTE: First-year students should be prepared to pay the sum of \$2.50 on registration day to cover the expenses of freshman initiation.



Fees other than the registration fee are payable at the time of enrolment.

The tool deposit of \$5.00 less deductions, if any, will be returned upon completion of the course. Tool deposits not claimed within thirty days after the close of the course are not recoverable.

Students will be expected to provide funds to meet the cost of various field trips throughout the year which constitute part of the course instruction.

BOARD AND LODGING: There are no residences operated by the Institute. Students may obtain board and room in the vicinity of the campus. A list of boarding houses may be obtained from the General Office on Registration Day. Board and room will cost approximately \$65.00 per month.

RAILWAY AND BUS TRANSPORTATION: Students planning to attend the Institute are advised to contact their local railway or bus ticket agents with respect to the special rates which are available to students.

ESTIMATED EXPENSES PER YEAR:

Regular Courses	5 months	8 months	9 months
Fees	\$ 65.00	\$ 65.00	\$ 80.00
Books and Tools (average)	85.00	85.00	85.00
Board and Room (@ approximately \$65.00 per month)	325.00	520.00	585.00
Clothing	75.00	75.00	75.00
Travel	60.00	60.00	60.00
Miscellaneous expenses	125.00	200.00	225.00
TOTAL	\$735.00	\$1005.00	\$1110.00

FINANCIAL ASSISTANCE

STUDENT LOANS are available to Alberta residents who attend full-term courses at the Southern Alberta Institute of Technology. Information and application forms are available from the Bursar. Students from other provinces should contact their own Department of Education.

OVERSEAS APPLICANTS—Financial assistance is not available through the Institute to overseas students. Applicants from other countries who require assistance should contact officials of their own governments to learn if they are qualified for aid from the Government of Canada under the External Aid Program.

THE CIVIL SERVICE ASSOCIATION OF ALBERTA BURSARIES to a maximum of \$300 a year are offered annually to first-year Institute students who are graduates from Alberta High Schools. These students must be children of provincial civil servants, retired provincial civil servants, or deceased provincial civil servants. The amount of \$300 will be paid to each recipient who finds it necessary to live away from home whereas \$150 will be paid to each recipient who can attend the chosen course while living at home. Application forms may be obtained from the Executive Secretary, Civil Service Association of Alberta, 10008 - 106th Street, Edmonton, and should be completed and returned to him not later than July 31.

IMPERIAL OIL LIMITED offers annual free tuition and other compulsory fees to all children or wards of employees and annuitants who proceed to higher education courses. The courses may be taken at any Canadian university or other approved institution of higher learning, including the Southern Alberta Institute of Technology. Each award is tenable for a maximum of four years. To be eligible a student must attain an average mark of 70% in the appropriate secondary school examinations in the subjects required for admittance to the approved institution. Further information and application forms may be obtained from the Secretary, Committee on Higher Education, Imperial Oil Limited, 111 St. Clair Avenue West, Toronto 7, Ontario.

MEDICINE HAT NEWS SCHOLARSHIPS, of \$150 each, one available to carriers and former carriers of The NEWS, the other available to children of employees of The NEWS. Application forms are obtainable at The Medicine Hat NEWS, Medicine Hat, Alberta. Deadline is August 1.

THE ALBERTA COMMAND, ROYAL CANADIAN LEGION BURSARY, of \$100, is available to a student in the second, third or fourth year of a course and is based on the student's academic performance in the previous years, as well as the student's financial need. Application forms may be obtained by writing to the Principal. Deadline for applications is August 31.

FORT CALGARY CHAPTER IODE BURSARIES, of \$100 each, are available to two Alberta students, who are the sons or daughters of widows. The students must have completed successfully the first year of their chosen courses at the Institute. The bursaries will be awarded on the basis of financial need and scholastic achievement. Deadline for applications is August 31.

MEWATA CHAPTER IODE BURSARY, of \$100, is available to a student entering the second year of an Institute full-time day technology or business course. The bursary will be awarded on the basis of financial need. Applications must be submitted to the Principal prior to August 31.

MUNICIPAL CHAPTER IODE BURSARY, of \$150, is available to a student who is a Calgary resident, and who is in either first or second year. Deadline for applications is August 31.

SCHOLARSHIPS AND AWARDS

Through the generosity of various business firms, organizations and individuals, and their interest in the work of the Institute, the following scholarships and awards are made available to students. The scholarships will be awarded to students for performance in the school year 1966-67 and will be tenable in the school year 1967-68. These scholarships are awarded on the basis of technical skill, academic ability, and qualities of leadership. Students should note that any scholarship is subject to withdrawal at any time.

The Institute does not offer entrance scholarships.

AERONAUTICAL ENGINEERING TECHNOLOGY

Canadair Aeronautical Engineering Scholarship, of \$500, is available to a student entering the third year of the course.

Canadian Aeronautics and Space Institute, Calgary Branch Prize to be awarded to the student who submits the best technical report.

Northwest Industries Limited Scholarship, of \$150, is available to a student entering the third year of the course.

United Aircraft of Canada Limited Scholarship, is available to a student entering the third year of the course.

AGRICULTURAL MECHANICS

The M. Cecil Brownlee Bursaries, from \$100 to \$300, are available to students in the first and second years of the course, who are residents of Alberta farms and intend to return to farming. The bursaries are awarded on the basis of need. Applications must be submitted to the Bursar prior to August 31.

Alberta Wholesale Implement Association Scholarship, of \$150, is available to a student entering the second year of the course.

United Grain Growers Scholarship, of \$50, is available to a student entering the second year of the course, to be awarded for scholastic achievement and technical skills.

AIR CONDITIONING AND REFRIGERATION TECHNOLOGY

Dr. George W. Kerby Chapter IODE Bursary, of \$100, is available to a student who completes successfully the first year of the course. The bursary will be awarded on the basis of financial need and scholastic achievement. The deadline for applications is August 31.

Honeywell Controls Limited Scholarship, of \$200, is available to a student entering the final year of the course.

The Southern Alberta Chapter of the American Society of Heating, Refrigeration and Air Conditioning Engineers Inc. Scholarship, of \$100, is available to a student entering the final year of the course.

AIRCRAFT MAINTENANCE TECHNOLOGY

Canadian Pacific Air Lines Award, of an industrial field trip to visit the Company's Airline Maintenance Operations in Vancouver, is available in the fall to a student entering the second year of the course.

Field Aviation Company Limited Scholarship, of \$300, is available to a student entering the second year of the course.

Foothills Aviation Limited Scholarship, of \$300, is available to a student entering the second year of the course.

Northwest Industries Limited Prize, of \$50, is available to a student entering the second year of the course.

Standard Aero Engine Limited Prize, of \$50, is available to a student entering the second year of the course.

ARCHITECTURAL TECHNOLOGY

Alberta Draftsmen's Association Bursary, of \$100, is available to a student entering the final year of either Architectural Technology or Drafting Technology. Applications should be made in writing to Mr. J. D. McGregor, of the Drafting Department prior to May 15, 1967.

Calgary Chapter, Alberta Association of Architects Book Awards, are available to three students entering the second year of the course.

Cecil S. Burgess Scholarship, of \$100, to be awarded by the Alberta Association of Architects, is available to a student entering the second year of the course.

Centennial Year Prize, of \$200, to be awarded by Messrs. Stevenson, Raines, Barrett, Hutton, Seton and Partners, is available to the best student entering the second year of the course.

ART

Alberta Distillers, Limited, Competition, is open to all third and fourth year students in Advertising Art and Fine Art courses. Details may be obtained from the Alberta College of Art.

Alberta Society of Artists (Calgary) Scholarship, of \$50, is available to a student in the second, third, or fourth year of the course.

Alberta Drafting and Blueprint Company Award, of art materials, is available to a student in the second, third, or fourth year of the course.

Anonymous Art Awards, of \$85, \$50, and \$35, are available to students in the second, third, or fourth years of the course.

Anonymous Award (Sculpture), of \$25 is available to a student in the second, third or fourth year of the course for work in sculpture.

A. C. Fuller Scholarship, of \$50, is available to a student in the second, third, or fourth year of the course.

Bapco Paint Supply Award, of art materials, is available to a student in the second, third, or fourth year of the course.

The Bay Scholarship, of \$35 is available to a student in the second, third, or fourth year of the course.

Calgary Business and Professional Women's Scholarship, of \$75, is available to a student in the second, third, or fourth year of the course.

Calgary Local Council of Women Scholarship, of \$50, is available to a student in the second, third, or fourth year of the course.

Calgary Herald Centennial Scholarship, of \$200, is available to an Advertising Art student in the third or fourth year of the course.

Canadian Western Natural Gas Company Scholarship, of \$50, is available to a student in the second, third, or fourth year of the course.

Henry Birks and Sons Award, of \$25, is available to a student in the second, third or fourth year of the course.

Hughes-Owens Scholarship, of \$50, is available to a student in the second, third or fourth year of the course.

Instituto Allende Tuition Scholarships available to two students in the fourth year of the course, details may be obtained from the Alberta College of Art.

Provincial Chapter IODE Bursary, of \$100, is available to a student who completes successfully the first, second or third year of Art course. The bursary will be awarded on the basis of financial need and artistic talent. The deadline for applications is August 31.

Woodward Stores (Calgary) Limited Scholarship, of \$35, is available to a student in the second, third or fourth year of the course.

AUTOMOTIVE SERVICE TECHNOLOGY

Calgary Motor Products Scholarship, of \$150, is available to a student entering the second year of the course who is a resident of southern Alberta including Innisfail and south.

Sine Nomine Scholarship, of \$125, is available to a student entering the second year of the course.

CHEMICAL TECHNOLOGY

J. S. Charlesworth Award, of \$25, is available to a student entering the second year of the course.

Chemcell Limited Scholarship, of \$150 is available to a student entering the second year of the course.

Chemical Advisory Committee Book Award, is available to the top Chemical Research Technology student.

Chemical Institute of Canada, Calgary Section, Award of lapel pins are available to two students in the first or second years of the course.

Chemistry Staff Award, of a shield, "for excellence in Chemistry", is available to the top student entering the second year of the course.

Imperial Oil Limited Scholarship, of \$150, is available to a student entering the second year of the course. This scholarship is awarded in alternate years to a student in Petroleum Technology.

Robin Hood Flour Mills Scholarship, of \$150, is available to a student entering the second year of the course.

Syncrude Canada Limited Scholarships, of \$150 each, are available to two students, one entering the second year of Chemical Technology, and one entering Chemical Research Technology.

COMMERCIAL COOKING

Alberta Hotel Association Scholarships available to students in this course are to be determined at a later date.

Alberta Government Travel Bureau Scholarships, of \$100, \$75, and \$50, are available to students entering the second year of the course.

Calgary Academy of Chefs Scholarship, of \$100, is available to a second year student who through his or her attitude and application of skills shows promise of becoming highly employable after graduation. This award will be presented at the Presidential Ball in February of each year.

DIESEL MECHANICS

Taylor, Pearson, and Carson Limited Award, of a Gray Bonney Tool Set, is available to the outstanding student in this course.

DRAFTING TECHNOLOGY

Alberta Draftsmen's Association Bursary, of \$100, is available to a student entering the final year of either Architectural Technology or Drafting Technology. Applications should be made in writing to Mr. J. D. McGregor, of the Drafting Department prior to May 15, 1967.

The British American Oil Company Limited Scholarship, of \$50 is available to a student entering the second year of the course.

Canadian Institute of Steel Construction Book Prizes are available to three students entering the second year of the course.

Canadian Western Natural Gas Company Limited Scholarship, of \$100, is available to a student entering the second year of the course.

Dominion Bridge Company Limited Award, of \$50, is available to a student entering the second year of the course.

United Packinghouse, Food and Allied Workers Scholarship, of \$100, is available to a student entering the second year of the course. If the recipient is a son or daughter of a trade union member, or is a member of a trade union, the scholarship will be increased by \$25.

ELECTRICAL TECHNOLOGY

Calgary Herald Scholarship, of \$300, is available to a student entering the second year of the course, who is a resident of southern Alberta including Lacombe.

Calgary Power Company Scholarship, of \$200, is available to a student entering the second year of the course.

The City of Calgary Electric System Scholarship, of \$200, is available to a student entering the second year of the course.

Eldorado Mining and Refining Limited Scholarship, of \$200, is available to a student in the first year of the course after mid-term examinations.

United Packinghouse, Food and Allied Workers Scholarship, of \$100, is available to a student entering the second year of the course. If the recipient is a son or daughter of a trade union member, or is a member of a trade union, the scholarship will be increased by \$25.

ELECTRONIC TECHNOLOGY

Canadian Electronics Limited Scholarship, of \$250, is available to a student who has graduated from a Calgary High School; this scholarship is awarded upon entering the second year of the course.

Institute of Electrical and Electronic Engineers Convention Tour and Awards to be given to the student submitting the best technical report with an additional award of \$25 to the second best.

Shell Canada Limited Scholarship, of \$250, is available to a student entering the second year of the course.

Smalley's Radio Limited Scholarship, of \$250, is available to a student entering the second year of the course.

United Packinghouse, Food and Allied Workers Scholarship, of \$100, is available to a student entering the second year of the course. If the recipient is a son or daughter of a trade union member, or is a member of a trade union, the scholarship will be increased by \$25.

HOTEL, MOTEL AND RESTAURANT ADMINISTRATION

Calgary Brewing and Malting Company Limited Scholarship, of \$500, is available to a student entering the second year of the course. If the recipient is a son or daughter of an owner, co-owner, or manager of an Alberta Hotel, Alberta Motel, or an Alberta Restaurant with a licensed beverage room, cocktail lounge or dining lounge, the scholarship will be increased to \$600.

Alberta Hotel Association Scholarships, five scholarships of \$150 each, are available to students entering the second year of the course.

JOURNALISM ADMINISTRATION

Calgary Herald Centennial Scholarship, of \$200, is available to a student entering the second year of the course. Consideration may be given to former Herald carriers.

MECHANICAL DESIGN TECHNOLOGY

Calgary Herald Scholarship, of \$300, is available to a student entering the second year of the course, who is a resident of Southern Alberta including Lacombe.

Canadian Western Natural Gas Company Limited Scholarship, of \$150, is available to a student entering the second year of the course.

Eldorado Mining and Refining Limited Scholarships, of \$200 each, are available to a student in the first year of the course after mid-term examinations, and to a student in the second year of the course, respectively.

United Packinghouse, Food and Allied Workers Scholarship, of \$100, is available to a student entering the second year of the course. If the recipient is a son or daughter of a trade union member, or a member of a trade union, the scholarship will be increased by \$25.

MERCHANDISING ADMINISTRATION

Canada Safeway Prize, of \$40 to \$70, for the purchase of textbooks, is available to a student entering the second year of the course.

The Bay Scholarship, of \$150, is available to a student entering the second year of the course. The awarding of the scholarship is contingent upon the applicant being employed by The Bay within the months of June, July and August immediately prior to the commencement of the second year of the course. Applications must be submitted not later than April 15.

Retail Council of Canada Award, of an engraved gold medal, is awarded to the top student in the second year of the course.

United Dairies Award, an engraved silver medal plus a cheque for \$25, is available to a student entering the second year of the course.

Zeller's Limited Scholarship, of \$100, is available to a student entering the second year of the course.

PETROLEUM TECHNOLOGY

Canadian Stratigraphic Service, Ltd. Scholarship, of \$200, is available to a student in the second year of the course.

Century Geophysical Corporation of Canada Scholarship, and Award, of \$150 and \$50, are available to a student entering the second year of the course, and a student in the first year, respectively. The \$150 scholarship is awarded only in alternate years.

Chevron Standard Limited Scholarship, of \$250, is available to the student with the highest standing entering the second year of the course.

Edmonton Branch, Canadian Oilfield Technical Society Scholarship, of \$100, is available to a student entering the second year of the course.

Imperial Oil Limited Scholarship, of \$150, is available to a student entering the second year of the course. This scholarship is awarded in alternate years to a student in Chemical Technology.

Shell Canada Limited Scholarship, of \$250, is available to a student entering the second year of the course.

POWER ENGINEERING TECHNOLOGY

Calgary Power Company Scholarship, of \$200, is available to a student entering the second year of the course.

Institute of Power Engineers Award, of \$50, is available to a student entering the second year of the course.

E. W. Wood Memorial Prize, of \$100, is available to a student entering the second year of the course. The prize is granted by the Advisory Committee for Power Engineering Technology.

STRUCTURAL TECHNOLOGY

Calgary Construction Association Prize, of \$100, is available to a second year student, awarded on the basis of the results of a Technical Report Competition.

Calgary General Contractors' Association Prize, of \$100 is available to a second year student, awarded on the basis of superior achievement in the estimating unit, term work and general scholarship in the course.

Calgary House Builders Association Prize, of \$100, is available to a second year student, awarded on the basis of superior achievement in the second year Structures Laboratory unit of the course.

N. Gallelli Memorial Bursary, of \$250, is available to a student who successfully completes the first year of the course. To be awarded on the basis of financial need and scholastic achievement. Deadline for applications is August 31.

SURVEYING TECHNOLOGY

Canadian Western Natural Gas Company Limited Scholarship, of \$150, is available to a student entering the second year of the course.

Sine Nomine Scholarship, of \$150, is available to a student entering the second year of the course.

GENERAL

Alex Ross Memorial Scholarships, of approximately \$200 each, are available to students entering the senior year of any course, including Advertising Art.

International Nickel Company of Canada Limited Scholarships, of \$250 each, are available to two students entering the second year of an engineering technology course.

The Alberta Society of Engineering Technologists Centennial Award, of \$150, is available to an engineering technology student entering the final year of his course.

The following is a list of awards presented to students at the Southern Alberta Institute of Technology by the Canadian Manufacturers' Association on behalf of members of their association and tenable in the school year 1966-67:

Alberta Phoenix Tube and Pipe Limited—Drafting Technology	\$ 50
The British American Oil Company Limited—Chemical Technology	50
The British American Oil Company Limited—Petroleum Technology	50
Consolidated Concrete Limited—Structural Technology	50
Consolidated Concrete Limited—Architectural Technology	50
Dominion Glass Company Limited—Mechanical Technology	50
Lennox Industries (Canada) Limited—Air Conditioning and Refrigeration Technology	50
North Western Pulp and Power Limited—Power Engineering Technology (2 x \$50 each)	100
Pitney-Bowes of Canada, Limited—Electrical Technology	50
Sicks' Lethbridge Brewery Limited—Mechanical Technology	50
Sicks' Lethbridge Brewery Limited—Chemical Technology	50
Sherritt Gordon Mines Limited—Chemical Technology	150
Summit Lime Works Limited—Chemical Technology	50

ADVISORY COMMITTEES

By authority of the Minister of Education, Advisory Committees have been organized for some of the Institute courses. These committees act as a liaison between Industry and the Institute, advise on curriculum and course content and foster interest in the industry for graduates of the courses. At present the following committees are functioning:

ADVISORY COMMITTEE — AERONAUTICAL ENGINEERING TECHNOLOGY and AIRCRAFT MAINTENANCE TECHNOLOGY

MR. V. H. FULCHER, Chief, Training Service, United Aircraft of Canada Ltd., P.O. Box 10, Longueuil, Montreal 23, P.Q.

MR. H. W. GRANT, Manager, Engineering and Contracts, Standard Aero Engine Ltd., International Airport, P.O. Box 764, Winnipeg, Man.

MR. C. M. HOVEY, Chief Engineer, Winnipeg Division, Bristol Aero-Industries Limited, P.O. Box 874, Winnipeg International Airport, Winnipeg, Manitoba.

MR. W. M. KEDDIE, Director of Maintenance & Engineering, Pacific Western Airlines Ltd., Vancouver Airport, B.C.

MR. T. E. TRUSCOTT, Supt. Training and Publications, Air Canada Air Base, International Aviation Building, Montreal, P.Q.

MR. D. J. TYNAN-BYRD, Supervisor Technical Employment, Canadair Ltd., P.O. Box 6087, Montreal.

MR. C. C. YOUNG, Chief Engineer, Northwest Industries Ltd., P.O. Box 517, Edmonton.

W/C H. J. HEMSLEY, Chief Technical Officer, No. 6 Repair Depot, R.C.A.F., Trenton, Ontario.

MR. W. H. ROLFE, Director of Publications & Training, Canadian Pacific Airlines Ltd., Vancouver Airport, VANCOUVER.

MR. G. E. BAGSHAW, Canada Manpower Centre, SAIT Campus, Calgary.

ADVISORY COMMITTEE — AIR CONDITIONING AND REFRIGERATION TECHNOLOGY

- MR. H. HAUGHTON, (Chairman) Manager, Weathermakers Limited, 10350 - 81 Avenue, Edmonton.
- MR. D. C. W. BELL, R. L. Brews & Son Ltd., 504 - 51 Avenue S.E., Calgary.
- L. E. STANLEY, P. Eng., Manager, Engineering & Service Department, Lennox Industries (Canada) Ltd., 5707 - 4 Street S.E., Calgary.
- MR. P. BUTLER, President, Angus Butler and Associates Ltd., 903 Financial Bldg., Edmonton.
- MR. R. T. CRAWFORD, P. Eng., Manager, Calgary District, Canadian Ice Machine Co. Ltd., 720 - 2 Avenue S.W., Calgary.
- MR. H. HOLE, Manager, Lockerbie & Hole Western Ltd., 10718 - 101 Street, Box 414, Edmonton.
- MR. N. J. HOWES, P. Eng., Reid, Crowther & Partners, 1134 - 8 Avenue S.W., Calgary.
- MR. J. P. KEARNS, Service Manager, Chinook Refrigeration & Air Conditioning Ltd., 235B - 17 Ave. S.E., Calgary.
- MR. GORDON MONRO, Carrier Air Conditioning (Canada) Ltd., 8 Howie Bldg., 215A 10 St. N.W., Calgary.
- MR. G. T. NARFASON, Trane Company of Canada Limited, 1029 - 7 St. S.E., Calgary
- MR. J. ORR, Honeywell Controls Limited, 102 - 58 Avenue S.W., Calgary.
- MR. ERNEST SCHAFFER, Fred Deeves & Sons Ltd., 1314 - 17 Avenue S.W., Calgary.
- PROF. G. W. SADLER, Assoc. Prof., Dept. of Mechanical Engineering, University of Alberta, Edmonton.
- MR. E. TARDIFF, Werner's Refrigeration Co. Ltd., 709 - 11 Avenue S.W., Calgary.
- MR. E. H. WATSON, Trotter & Morton Ltd., 204 - 5 Street S.W., Calgary.
- MR. R. HANLAN, Canada Manpower Centre, SAIT Campus, Calgary.

ADVISORY COMMITTEE — ARCHITECTURAL TECHNOLOGY

- MR. GILBERT R. BEATSON, Beatson, Stevens and Associates, 1134 8 Avenue S.W., Calgary.
- MR. K. L. BOND, Clayton, Bond and Mogridge, Addison Penthouse, 501 18 Avenue S.W., Calgary.
- MR. ALTON McCAUL BOWERS, B.Arch., MRAIC, 1812 - 20 Avenue N.W., Calgary.
- MR. A. DALE, A. Dale and Associates, 1640 - 16 Avenue N.W., Calgary.
- MR. K. EGGENBERGER, J. H. Cook & Associates, 802 - 16 Ave. S.W., Calgary.
- MR. BRYAN CAMPBELL-HOPE, Supervising Architect, Department of Public Works, Terrace Building, Edmonton.

- MR. H. W. R. McMILLAN, McMillan, Long and Associates, 202-212 7 Avenue S.W., Calgary.
- MR. W. G. MILNE, 604 - Lesson-Lineham Bldg., Calgary.
- MR. H. SETON, John Stevenson and Associates, 344 - 12 Avenue S.W., Calgary.
- MR. J. K. SHEDDEN, Shedden and Field, 201-524 - 17 Ave. S.W., Calgary.
- MR. D. S. STEVENS, Stevens & Associates, 1134 - 8 Avenue S.W., Calgary.
- MR. MAURICE SUNDERLAND, Abugor and Sunderland, Architects & Consulting Engineers, 640 - 12 Avenue S.W., Calgary.
- MR. W. G. HAMES, Rule, Wynn and Rule Associates, 526 - 12 Ave. S.W., Calgary.
- MR. G. E. BAGSHAW, Canada Manpower Centre, SAIT Campus, Calgary.

ADVISORY COMMITTEE — BUSINESS ADMINISTRATION AND SECRETARIAL ARTS

- MR. T. R. HUMPHRIES (Chairman), 817 Rideau Road S.W., Calgary, Alberta.
- MR. L. G. AHRENS, Provincial Sales Manager, Imperial Oil Limited, 1035 - 124 Street, Edmonton.
- MR. P. J. BYRON, Manager, Division Sales, Dictaphone Corporation Ltd., 631 - 42 Avenue S.E., Calgary.
- MR. J. W. CARVER, Personnel Co-ordinator, Calgary Power Ltd., 140 - First Avenue S.W., Calgary.
- MR. O. GARDNER, Personnel Officer, Alberta Government Telephones, 119 - 6 Avenue S.W., Calgary.
- MR. S. J. HUNGERFORD, Western Management Representative, Du Pont of Canada Limited, Room 200 - 1111 - West Georgia St., Vancouver 5, B.C.
- MR. HARRY LINDHOLM, Chief Accountant, City of Calgary, 313 - 7 Avenue S.E. Calgary.
- MR. J. E. MULLOY, Municipal Administrator, University of Alberta, Edmonton, Alberta.
- MRS. SHEILA MURPHY, Shell Canada Ltd., 1027 - 8 Avenue S.W., Calgary.
- MR. R(on) MacDONALD, Office Manager, Calgary Packers, 26 Avenue at 11 Street S.E., Calgary.
- MR. A. McINTOSH, Manager, Union Packing Company Ltd., 15 Street at 7 Ave. N.E., Calgary.
- MISS M. PETERSON, Manpower Services (Calgary) Ltd., 533 - 11 Avenue S.W., Calgary.
- MR. D. W. POGUE, Supervisor of Personnel, British American Oil Co. Ltd., 707 - 7 Avenue S.W., Calgary.
- MR. W. K. RICHARDSON, Manager, Credit Bureau of Calgary Ltd., 720 - 17 Avenue S.W., Calgary.
- MR. ADRIAN SMITH, Finance Dept., Alberta Gas Trunk Line Co. Ltd., 505 - 2 Street S.W., Calgary.

- MR. A. L. THOMAS, National Cash Register Co. of Can. Ltd., 820 - 16 Ave. S.W., Calgary.
- MR. BOYD R. WILLETT, Personnel Dir., Can. Western Nat. Gas Co. Ltd., 140 - 6 Ave. S.W., Calgary.
- MR. R. A. YOUNG, Personnel Selection Officer, Govt. of Prov. of Alta., 118 - 11 Ave. S.E., Calgary.
- MR. G. E. BAGSHAW, Canada Manpower Centre, SAIT Campus, Calgary.

ADVISORY COMMITTEE — CHEMICAL TECHNOLOGY, CHEMICAL RESEARCH TECHNOLOGY

- MR. W. A. FLOOK (Chairman), Superintendent of Chemical Development & P.C. Control, Chemcell (1963) Ltd., P.O. Box 99, Edmonton.
- MR. R. E. ALSTON, Superintendent of Laboratories, Northwest Nitrochemicals Co., Medicine Hat, Alberta.
- MR. D. H. ANDERSON, Chief Chemist, Burns Foods Ltd., 21st Avenue & Portland Street, P.O. 1300, Calgary.
- DR. T. H. ANSTEY, Director, Research Branch, Canada Dept. of Agriculture, Research Station, Lethbridge.
- MR. J. S. CHARLESWORTH, Chief Chemist, Research Council of Alberta, 87 Avenue at 114 Street, Edmonton, Alberta.
- DR. W. W. HARRIS, Prof. Analytical Chemistry, University of Alberta, Edmonton.
- MR. A. FITZPATRICK, (Vice Chairman), Industrial Engineer, Research Council of Alberta, 87 Avenue at 114 Street, Edmonton.
- DR. J. B. HYNE, Professor, Dean of Graduate Studies, University of Calgary, 26 Avenue at 26 Street N.W., Calgary.
- MR. T. R. KIRKHAM, Administrative Assistant, Research & Development Branch, Atomic Energy of Canada Ltd., Pinawa, Man.
- MR. M. M. MCKAY, C.I.L. Polythene Plant, P.O. Box 428, Edmonton.
- DR. B. MEDDINGS, Assistant to Production Supt., Sherritt-Gordon Mines Ltd., Fort Saskatchewan, Alberta.
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- MR. R. MacGREGOR, Supervisor, Systems Support and Technical Services, British American Oil Company, B.A. Oil Building, 707 - 7 Ave. S.W., Calgary.
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MR. G. W. LAWSON, Chief Electrical Inspector, Department of Labour, Terrace Building, 96 Ave. at 106 St., Edmonton.

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MR. D. E. H. REYNOLDS, Structural Engineer, Dominion Bridge Company Ltd., 803 - 24 Ave. S.E. — Box 430, Calgary.

MR. J. E. RYMES, Manager of Engineering, Robin-Nodwell Mfg. Ltd., P.O. Box 1450, 5201 - 1 St. S.W., Calgary.

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- DR. G. O. RAASCH, Geological Consultant, Shell Canada Ltd., Box 100, Calgary.
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- MR. A. V. PETTIGREW, Assitant Superintendent, Parks & Recreation Dept., City of Edmonton, 11503 - 77 Avenue, Edmonton.
- MR. J. W. RIDDELL, Acting Supervisor Community Programs, Recreation & Cultural Development Branch, 424 - Legislative Building, Edmonton.
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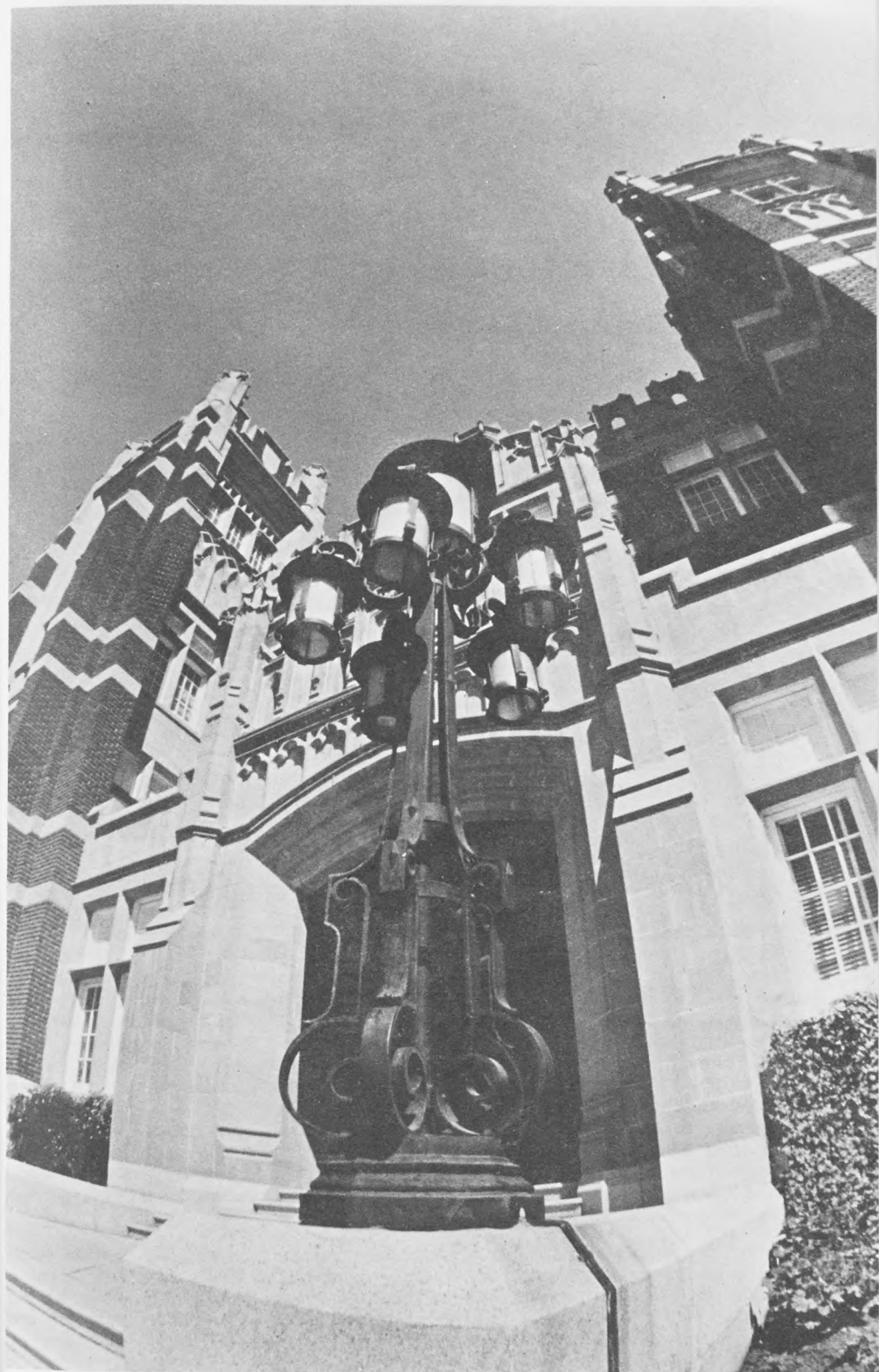
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- MR. J. W. JOHNSON, Bird Construction Co. Ltd., 1427 - 19 Ave. S.E., Calgary.
- MR. W. J. SISSONS, Vice-Pres. Marketing, Medicine Hat Brick & Tile Co. Ltd., Box 70, Medicine Hat, Alta.
- MR. R. E. SMITH, Safety & Personnel Director, Mannix Company Ltd., 737 - 8 Ave. S.W., Calgary.
- MR. R. A. STEELE, J. K. Campbell & Associates Ltd., 1411 - 40 Ave. S.E.
- MR. O. J. TURRI, 517 - Connaught Drive, Medicine Hat, Alta.
- MR. RALPH S. WHITE, United Investment Services Ltd., 660 - 97 Ave. S.E., Calgary.

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- MR. MAX KLAASSEN, Office Engineer, City of Calgary Engineering Dept., 323 - 7 Avenue S.E., Calgary.
- MR. W. D. USHER, W. D. Usher & Associates Ltd., 780 - One Thornton Court, Edmonton.
- MR. W. YOUNGS, Director of Surveys, Department of Highways, Highways Building, Edmonton.
- MR. C. D. WORBY, Area Engineer, C.N.R., C.N.R. Depot, Calgary.
- MR. G. E. BAGSHAW, Canada Manpower Centre, SAIT Campus, Calgary.



Aeronautical and Mechanical Department

A. R. G. LECKIE, DEPARTMENT HEAD

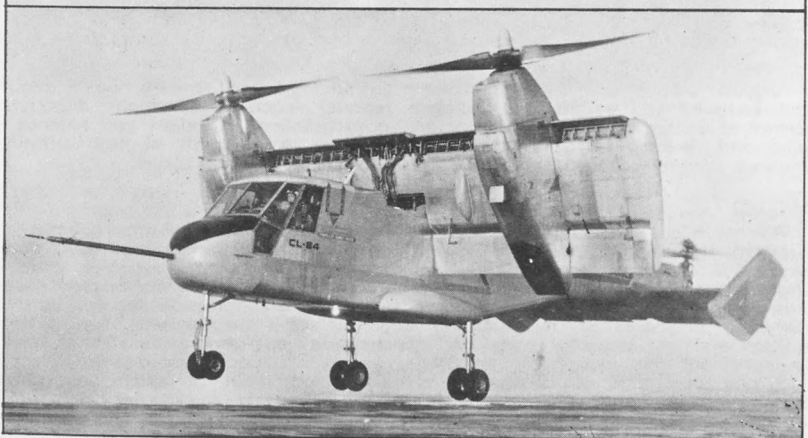
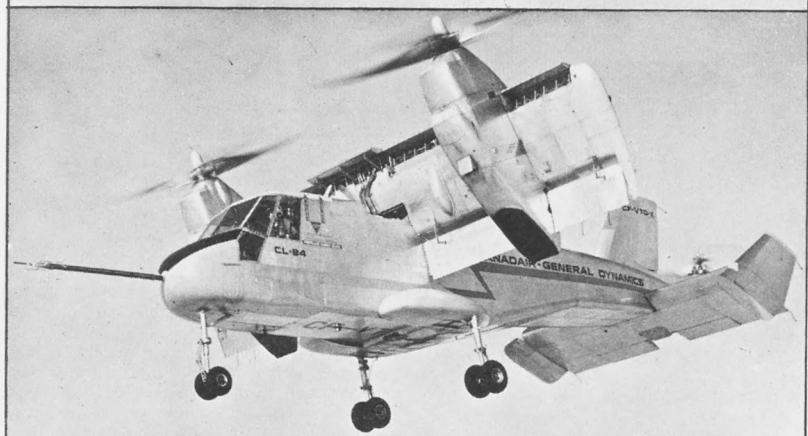
AERONAUTICAL ENGINEERING TECHNOLOGY AIRCRAFT MAINTENANCE TECHNOLOGY MECHANICAL DESIGN TECHNOLOGY

Mechanical Technology (3 year course terminating in 1967-68
Academic Year)

AERONAUTICAL ENGINEERING TECHNOLOGY

With the launching into orbit of "Sputnik I" in October, 1957 by the Russians, there was no longer any doubt that we were in the space age. Since then, it seems, interest in conventional aircraft, that is aircraft operating up to altitudes of 6 - 10 miles, has decreased. Some of the glamour has disappeared and this in itself may not be altogether a matter of regret, for the design and manufacture of present day aircraft is very far removed from the almost magical discoveries and improvements which took place earlier in aviation history. Estimates vary, but one can be reasonably sure that from the original laying down of the specifications for a radically new aircraft until its acceptance by either the military or commercial purchaser, there elapses at least six years of work. Guiding the project through each phase is the engineering team — the scientist, the engineer, the technologist or technician, and the personnel mainly responsible for the manufacturing aspects — the skilled craftsmen.

In aeronautics, as in other fields of engineering, it is difficult to distinguish between the work of the scientist, the engineer, and the technologist because their job functions overlap but in the main the technologist can be defined as one who can apply in a responsible manner proven techniques which are commonly understood by those who are expert in aeronautical engineering, or those techniques specifically prescribed by professional engineers.



Admission prerequisites and enrolment regulations are given on pages 16 and 22. A statement of high school results, or other documentary proof, must accompany each application.

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

Subject	Unit	Hours
Aeronautical Fundamentals	AET-100	90
Aeronautical Laboratory	AET-102	60
Engineering Materials	AET-103	30
Manufacturing Methods	MS-106	120
Mathematics	MATH-112	150
Physics	PHYS-112	180
FORTRAN Programming	CT-100	30
Chemistry	CHEM-103	60
English	ENGL-101	60
English	ENGL-101	60
Total		900

AET-100	AERONAUTICAL FUNDAMENTALS	90 Hours
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Airworthiness control and certification to include inspection system.

Aircraft weight and balance control, terminology and symbols; basic measurement and computation; weight and balance reports; reaction to weight distribution and control of center of gravity position; advanced problems in weight and balance loading; icing and de-icing systems; cabin pressurization, requirements of high altitude flight, pressure control systems; skis and floats; effects of decompression.

AET-102 AERONAUTICAL LABORATORY 60 Hours

This unit consists largely of demonstrations in the Aeronautics Laboratory which augment the related theory. Woodworking power tools, glue mixing and application; description and operation of various air-frame parts; doping procedures; procedures in aircraft rivetting and sheet metal layout; aircraft hardware coding systems; fabrication tensioning and testing of control cable terminals; anti-corrosion procedures; processes; operating principles of reciprocating engines, valve mechanisms, fuel systems and ignition systems; propeller types and construction; operating principles of controllable, counterweight and hydromatic propellers; propeller constant speed principles; construction and operation of constant governors; fixed pitch propellers, application and capabilities; feathering systems and operation; field trips; aircraft weighing procedures; use and application of computing instruments to control C.G. during loading of aircraft.

AET-103

ENGINEERING MATERIALS

30 Hours

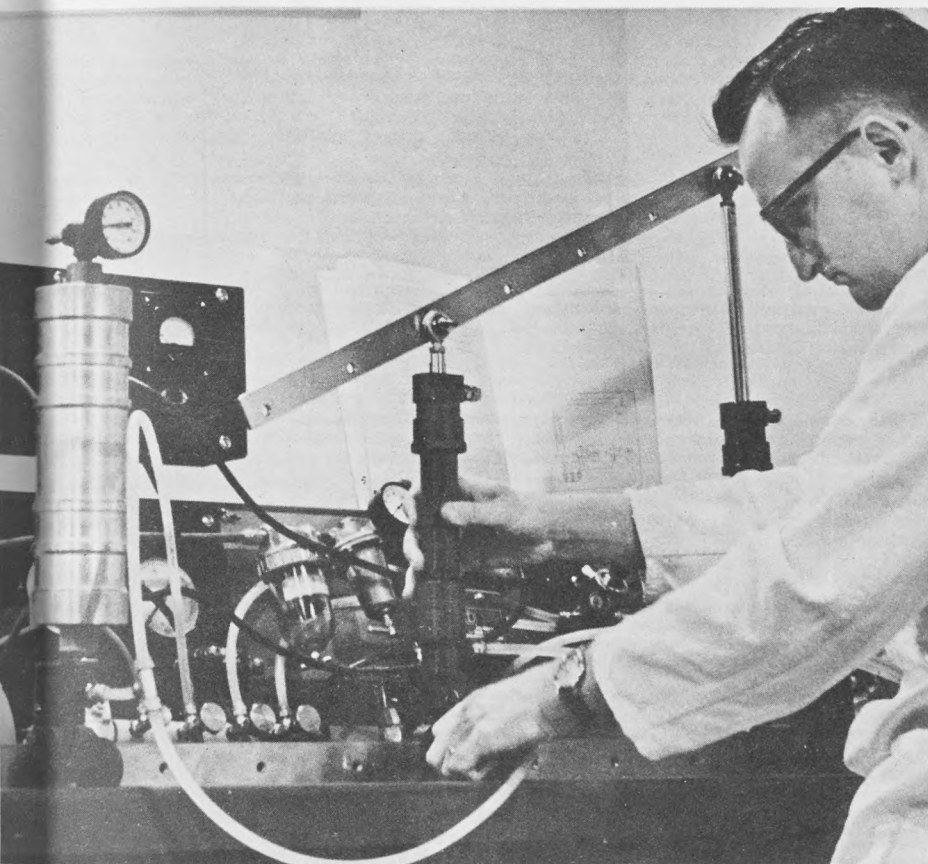
Basic physical properties of materials: strengths, stress, strain, elasticity; aircraft material specifications and documentation; natural and synthetic rubbers: terminology, properties, testing and applications.

Aluminum: the reduction process, alloying elements, alloy designations, heat treatment and phase diagrams; the effects of cold working, temper designations, properties and uses of specific alloys; casting processes, applicable alloys and heat treatments.

Magnesium: its production, alloying elements, alloy designations, heat treatment and uses.

Corrosion: its nature and action; the prevention of corrosion in ferrous metals and light alloys. Electroplating and the oxide processes: anodizing and chemical conversion coatings; organic finishes; primers; enamels.

Plastics: the various groups, their properties and uses.



MT-106

MANUFACTURING METHODS

120 Hours

The theory portion of the course covers the range of machine tools commonly used in industry. Topics are: measuring standards and instruments, bench tools, drilling machines, lathe operations, shaping and planing machines, milling machines, grinding operations, production methods in industry, principles and uses of welding. The practical part of the course consists of basic lathe work to develop an appreciation of machine tool operation. Demonstrations are given of other machine tools such as the milling machine, surface grinder, cylindrical grinder, shaper, etc., to show the variety of work they are able to perform.

MATH-112

MATHEMATICS

150 Hours

Theory, use and scope of the slide rule; exponents; logarithms; logarithmic and exponential equations; algebraic expansions; factoring; remainder theorem; binomial theorem; graphs of equations; roots of equations; sine and cosine laws; solution of triangles; identities and equations; inverse functions; double angle forms; graphs of trigonometric functions; negative angles; the straight line; systems of lines; the

circle; the parabola; the ellipse; the hyperbola; loci; limits; derivatives; general methods of differentiation; implicit differentiation; differentiation of transcendental functions; rates; differentials; extreme values; integration; definite integrals; areas; volumes; length of arc.

PHYS-112

PHYSICS

180 Hours

Composition and resolution of vectors: equilibrium, moment of a force, second condition for equilibrium, couples; rectilinear motion, average and instantaneous velocities and accelerations, relative velocity; Newton's second law systems of units, universal gravitation; motion of a projectile; circular motion, centripetal force; work and energy, power, simple machines; impulse and momentum, conservation of momentum, collisions; angular velocity and acceleration, kinetic energy of rotation, moment of inertia, work and power in rotational motion, torque and angular acceleration, angular momentum; elastic restoring forces, equations of simple harmonic motion, the simple pendulum; pressure in a fluid, pressure gauges, Archimedes' principle; surface tension, capillarity; Bernoulli's equation, equation of continuity, applications of Bernoulli's equation.

Electric charges, conductors and insulators, Coulomb's law, systems of units; the electric field, field intensity, lines of force, Gauss' law; electric potential energy, potential difference; capacitors; current, complete circuit, resistivity, resistance, Ohm's law, measurement of current, p.d. and resistance, Wheatstone bridge, Joule's law; emf, t.p.d., potentiometer, networks, Kirchoff's laws, power, measurement of power and energy; magnetism, magnetic field and induction, lines of induction, flux; self inductance, circuit containing inductance and resistance, induction coil, circuit containing resistance and capacitance; a-c circuit, effective values, phase relations, resonance, power in a-c circuits, the transformer.

Electron emission, hi diode, rectification, triode, amplification, cathode ray tubes, photoelectric effect, X-rays, geiger and scintillation counters, semi-conductors, transistors, electric oscillations, electro magnetic waves.

CT-100

FORTRAN PROGRAMMING

30 Hours

Introduction to computer systems; coding methods; input and output devices. Fortran; constants, variables, operations and expressions; arithmetic statements; input and output; control transfer; subscripted variables and DO statements; functions and specification statements. Lab exercises.

CHEM-103

CHEMISTRY

60 Hours

The atomic theory; electrons, atoms, ions and molecules; states of matter; the kinetic theory; classes of compounds; formulae and equations; oxygen; chemical arithmetic; solutions; chemical equilibrium involving ions in solution; nuclear chemistry.

Study of petroleum and petroleum products, aviation gasoline, kerosene, jet fuels, lubricating oils, greases, based on standard A.S.T.M. petroleum tests, including distillation, vapor pressure, preformed gum, viscosity, pour point, flash point, Conradson Carbon residue, crank case dilution, acid and base numbers.

DFTG-110

DRAFTING

120 Hours

Use of instruments; lettering; geometric construction; technical sketching; multi-view orthographic projection; sectional views; auxiliary views, dimensioning; working drawings; axonometric projection; oblique projection; intersections and developments; aeronautical drafting; reproduction of drawings.

ENGL-101

ENGLISH

60 Hours

This course is designed to improve the student's ability to write and speak clearly, concisely and effectively. It includes a detailed study and practice of technical writing principles and style; special techniques of technical writing; types and formats of formal and informal reports; business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

SECOND YEAR

Subject	Unit	Hours
Heat Engines	AET-201	90
Fluid Mechanics	AET-204	120
Aeronautical Laboratory	AET-202	90
Statics and Strength of Materials	AET-203	90
Metallurgy	MLY-205	60
Mathematics	MATH-212	120
Physics	PHYS-212	90
Electronics	EN-213	60
Aeronautical Drafting	DFTG-210	120
English	ENGL-201	60

Total900

- AET-201** **HEAT ENGINES** **90 Hours**
Heat engine classifications; auxiliary ignition and diesel engines, cycles; basic terminology, horse power calculations, engine testing; carburetion; supercharging; jet propulsion, propulsive devices and basic terminology; Brayton cycle, design and performance of gas turbine components; fuel systems; laboratory work.
- AET-204** **FLUID MECHANICS** **120 Hours**
Fluid properties and definitions: viscosity, density, specific volume, specific weight, specific gravity; perfect gas; bulk modulus of elasticity. Fluid statics: pressure variations in a static fluid; manometers; relative equilibrium; forces on plane and curved surfaces; buoyancy and stability of floating and submerged bodies. Fluid flow concepts and basic equations; reversibility, irreversibility and losses; types of flow; continuity equation; Euler's equation; Bernoulli's equation; dynamic lift and airfoil characteristics; linear momentum equation and propulsion; moment of momentum. Dynamic analysis and dimensional similitude; viscous effects: laminar flow through circular tubes; Reynolds number; boundary layer concepts: drag on immersed bodies; resistance to turbulent flow in open and closed channels. Turbomachinery: specific speed; cascade theory; impulse and reaction turbines; pumps and blowers; centrifugal compressors; fluid couplings and torque converters; cavitation. Aircraft stability and control.
A number of laboratory experiments will be carried out to complement the theory.
- AET-202** **AERONAUTICAL LABORATORY** **90 Hours**
Rigging of airframe components and flying controls; aircraft symmetry check; undercarriage and brake operating principles; aircraft weight and balance procedures; powered flying control systems; de-icing systems; turbo-jet engine components and systems; engine overhaul procedures and engine testing; aircraft hydraulics — basic principles of operation of components and their function in the hydraulic system; aircraft instruments — function and principles of operation of flight instruments including gyroscopic instruments and engine instruments; the magnetic compass — its errors and corrections; the automatic pilot; repair of welded steel tubular structures; field trips.
- AET-203** **STATICS AND STRENGTH OF MATERIALS** **90 Hours**
Statics: unit vectors; equilibrium; free body diagrams; moments; equivalent systems. Strength of materials: stress and strain; elasticity, elastic limit, modulus of elasticity, stresses in combinations of materials, temperature stresses, Poisson's ratio, biaxial and triaxial stress and strain; torsion: torsional stress and strain, torque and angular deflection, shafting, helical springs, torsion in bars of non-circular section; shear and moment in beams: shear equations, moment equations, points of inflection; stresses in beams: unsymmetrical bending; bending combined with direct tension or compression: deflection of beams: by double integration; combined stresses: principal planes and principal stresses; Mohr's Circle for Stresses.
Testing of materials, tensile test, torsion test.
- MLY-205** **METALLURGY** **60 Hours**
The tension test: hardness testing; impact testing; solidification of metals, structure of ingots and castings, and possible defects in them; equilibrium diagrams; deformation and annealing of metals; heat treatment of steel: annealing, normalizing, quenching and tempering; interrupted quenches: austempering and martempering; surface hardening of steel: carburizing, nitriding, cyaniding, flame and induction hardening: alloy steels; heat treatment of the alloys of aluminum, magnesium and titanium; laboratory work to demonstrate the microstructures and process discussed in the lectures, and the determination of mechanical properties.
- MATH-212** **MATHEMATICS** **120 Hours**
Imaginary and complex numbers: the "j" operator, De Moivre's theorem; Euler's equation; Maclaurin's series; hyperbolic functions; numerical solution of higher degree equations; determinants; surfaces of revolution; centroids, fluid pressure; work; moments of inertia; mean value theorem; Rolle's theorem; indeterminate forms; standard forms of integration; table of integrals, reduction formula, partial fractions; polar co-ordinates; parametric equations; curvature; differentiation of vector functions; analytical geometry of 3 dimensions with vectors; dot and cross products; surfaces and curves in space; functions of several variables; partial differentiation; maxima and minima; total derivatives; approximate errors.
- PHYS-212** **PHYSICS** **90 Hours**
Heat: thermometry; expansion; heat; first and second laws of thermodynamics; thermal properties of gases; change of phase; heat transfer. Sound: Wave motion; sound waves. Optics: Light and photometry; reflection; mirrors; refraction; lenses and optical instruments; the wave nature of light.
- EN-213** **ELECTRONICS** **60 Hours**
Familiarization with inductances, capacitances, and resistors as used in electronics; basic theory of vacuum tubes; conductors in electronics; basic principle of the transistor; special vacuum tubes; basic electronic circuit principles: amplification, oscillation, resonance, time delay; general application of electronic devices to aircraft; electronic and aeronautical engineering co-ordination problems.

Descriptive Geometry (projection method):

Projection of the space body on orthographic screens; notation used; measuring direction, slope and distance of lines and points; minimum and maximum views of lines; the intersection of lines; the shortest distance between skew lines; describing the plane; minimum and maximum views of the plane; the piercing point of a line and a plane; the intersection of planes; true angle between planes.

Descriptive Geometry (revolution method):

Principles of revolution; notation used; revolving points and lines in space; setting problems and counter revolution; revolving lines into the plane; revolution of planes; true angle between planes by the revolution method.

Mechanical Drafting — gears; threads, limits, fits, tolerances, finishes, dimensioning, aircraft drafting practices.

This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal technical reports. It also includes a study of the mass media, and a study and application of the principles of public speaking; types of formal and informal speeches; and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluation.

THIRD YEAR

Subject	Unit	Hours
Aerodynamics	AET-304	150
Thermodynamics	AET-305	120
Aircraft Structural Analysis	AET-303	180
Theory of Machines	AET-306	90
Design	AET-307	60
Engineering Mechanics	AET-308	60
Mathematics	MATH-312	150
Engineering Economics	BA-300	90
Total		900

Bernoulli's compressible flow equation and application to flight and nozzle problems; sonic and supersonic flow in nozzles; Reynold's and Mach. number influence in model testing; introduction to laminar and turbulent boundary layer theory; friction drag.

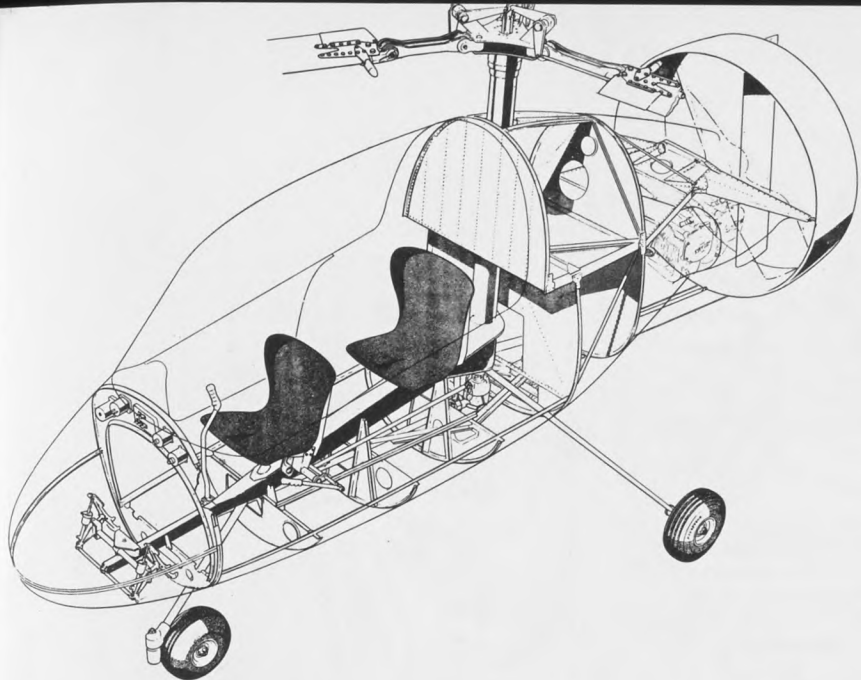
Stream function: source, sink, doublet, Rankine oval, flow around cylinder; circulation, vorticity, Kutta-Joukowski lift theorem; velocity potential; conformal transformation; airfoil lift distribution; flow in field of airfoil; Biot-Savart law; profile and induced drag; aspect ratio corrections to airfoil characteristics; straight and level flight, power required; propeller theory and performance.

Stagnation densities, pressures and temperatures; critical speed of sound; compressibility factor; pressure disturbances in a compressible fluid; normal compression shock and associated relationships; oblique shock theory, shock tube theory.

Wind tunnel laboratory work.

Thermodynamic properties; nonflow and steady flow systems; energy equations; reversibility, processes applied to ideal gases; cycle analysis and reversed cycles; entropy and the Second Law; compressors and multistage compression; gas turbines and jet engines; the transfer of heat; two phase systems, properties of steam, steam tables, gas turbine, ramjet and internal combustion engine laboratory work.

Equilibrium of truss structures; General loads on aircraft; Beams: shear and moments, beam columns. Torsion: stresses and deflections. Deflections of structures: Castiglione's Theorem; virtual work methods. Statically indeterminate structures: Theorem of least work, virtual work, three-moment equation, column analogy method, moment distribution method. Bending stresses: shear center, symmetrical and unsymmetrical sections, sound and open sections; shear flow in closed thin-wall sections; elastic and inelastic stability of columns and thin sheets, strength and design of tubing columns; analysis of wing structures; fuselage stress analysis; loads and stresses in ribs and frames. Thin-web Beams: NASA method of strength analysis for semi-tension field beams with flat webs.



AET-306 **THEORY OF MACHINES** **90 Hours**

Kinematic Analysis of Mechanisms: introduction to geometry of motion; mechanism trains; linkages, cams; analogue computing mechanisms.

Dynamic analysis of Mechanisms: vibration analysis; balancing of rotating and reciprocating masses; critical shaft speed; dynamics of reciprocating engines; dynamics of feedback control systems.

Several laboratory experiments will be carried out during the year illustrating theoretical principles studied.

AET-307 **DESIGN** **60 Hours**

Review of principles of mechanics of materials: working stresses; shafting; springs, screws, belts, clutches, brakes; welded and riveted connections; lubrication, ball and roller bearings; gearing; laboratory work: electrical and mechanical strain gauges; photo-elastic stress analyses; fatigue testing.

AET-308 **ENGINEERING MECHANICS** **60 Hours**

Kinematics of particles; force, mass and acceleration; work and energy; impulse and momentum; kinematics of rigid bodies; plane motion of rigid bodies; force and acceleration, impulse and momentum; kinetics of rigid bodies. Applications are made to satellite orbits and the governing laws.

MATH-312 **MATHEMATICS** **150 Hours**

Further work on Maclaurin's and Taylor's series; convergence tests for infinite series; power series; application to approximate integration and series solutions of second order differential equations; integration problems in polar and parametric forms; successive partial differentiation with change of variable; introduction to Cauchy-Riemann equations and indications of their applications; Jacobian as a determinant; multiple integration and applications to areas, volumes, moments of inertia, in cartesian, polar and cylindrical coordinates; further work on series; first order differential equations with applications to geometry, mechanics and thermo-dynamics; second and higher order differential equations with applications to vibration problems; the "D" operator, Bessel functions; a review of vector algebra; grad, div and curl with applications in heat and thermodynamics; Green's theorem.

BA-300 **ENGINEERING ECONOMICS** **90 Hours**

Engineering Economics examines economic theory and business practice in relation to engineering principles. Its core is the engineering economy study, a critical study of alternative methods of doing an engineering project to find the one approach that will give satisfactory results at least cost; this involves taking into account all pertinent technical, monetary, and non-monetary factors. Just as accounting practice records the financial history and efficiency of a project during and after its completion, so also does engineering economy study attempt to assess the financial feasibility of an engineering project before it is made. Thus, Engineering Economics of necessity includes study of such elementary economic, business and engineering topics as: interest; value; annuities; depreciation; types of business organization; securities; contracts; estimating elements of cost; basic accounting; fixed, differential, sunk costs; replacement studies; capacity, load, future demand factors. In addition, the Engineering and Related Professions Act (Alberta), including the By-laws and Code of Ethics of the Association of the Professional Engineers (Alberta), is studied.

Throughout this subject, emphasis is placed on the effective use of communication skills.

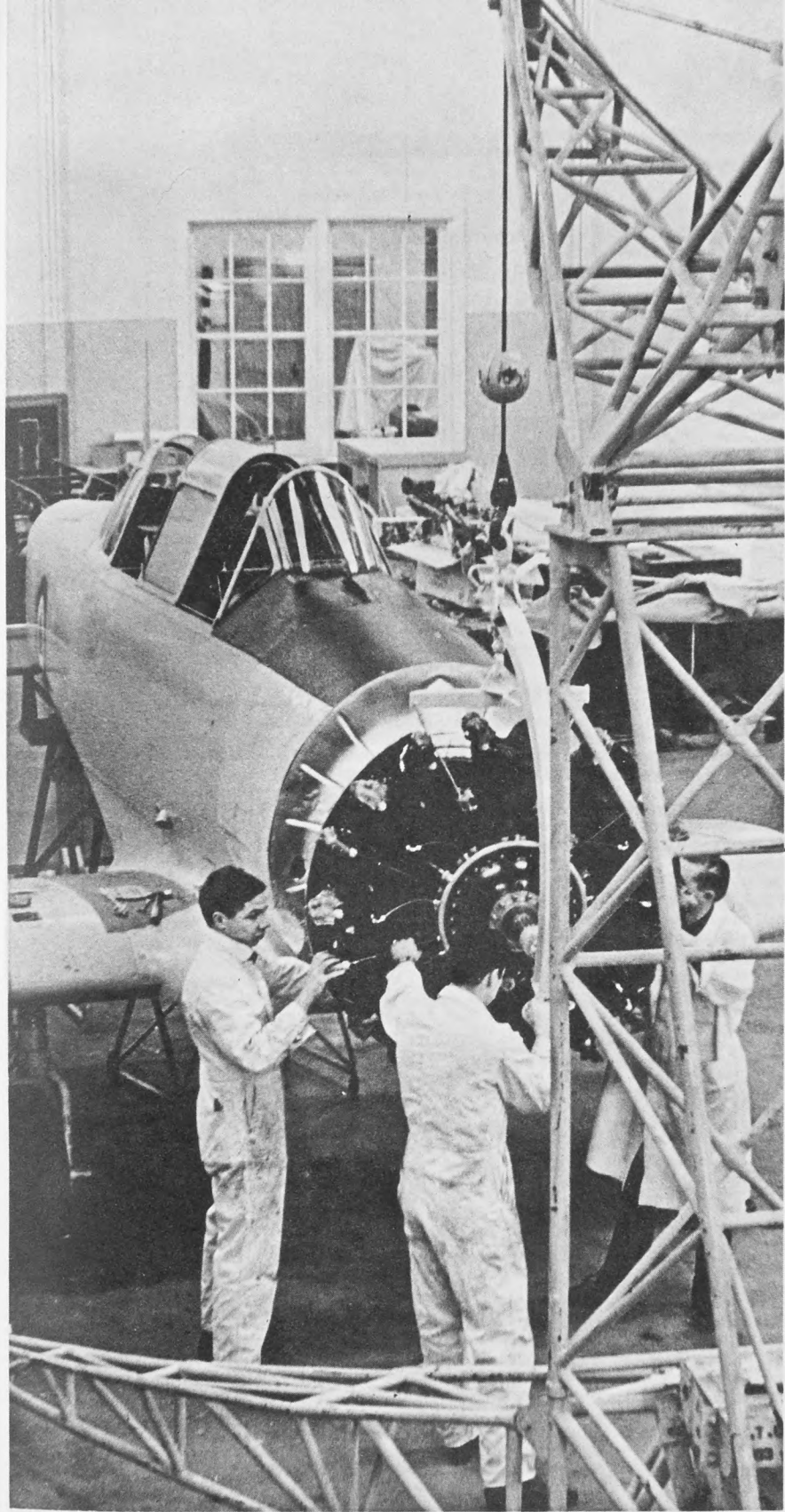
AIRCRAFT MAINTENANCE TECHNOLOGY

The Institute offers an Aircraft Maintenance Technology course of two years, covering instruction in both airframes and engines. The objective of this course is to provide the technical training required by the Department of Transport for the Aircraft Maintenance Engineer's Licence "A" category.

A diploma from this course may be recognized by the Department of Transport as an exemption from all examinations in this category with the exception of Air Regulations. Time spent by students in the shops is credited to the experience qualification required for the "A" Aircraft Maintenance Engineer's Licence. The Department is also one school of Aviation in Canada listed by the Department of Transport as an Authorized Enterprise" for the rebuilding, repair and overhaul of commercial aircraft and engines.

For the past several years graduates of the Maintenance Course have found employment with aircraft operating companies all over Canada. Industrial development in the Canadian North over the past years has led to the use of more and more aircraft; this in turn has improved the employment situation, both for mechanics' helpers and licenced aircraft maintenance engineers. Opportunities for employment range from the large airline companies to the small flying schools and clubs.

Admission prerequisites and enrolment regulations are given on pages 17 and 22. A statement of high school results, or other documentary proof, must accompany each application.



AIRCRAFT MAINTENANCE TECHNOLOGY

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

FIRST YEAR

Subject	Unit	Hours
Airframe Shop	AMT-100	165
Airframe Theory	AMT-101	60
Aero Engine Shop	AMT-102	165
Aero Engine Theory	AMT-103	60
Aeronautical Theory	AMT-104	60
Aircraft Materials	AMT-105	60
Electrical Theory and Lab.	ET-107	90
Drafting	DFTG-102	90
Mathematics	MATH-103	90
English	ENGL-101	60
Welding	W-101	60
Total		960

AMT-100

AIRFRAME SHOP

165 Hours

The care, use and maintenance of hand and power-operated wood-working tools; layout of wing rib from table of co-ordinates; design and construction of airframe component jigs; methods of wood finishing, varnishing, and dope-proofing; practical shop work involving use of drills, taps and dies; layout and fabrication of aircraft fittings.

Aircraft sheet metal work; hand and pneumatic riveting processes; layout work including correct spacing and edge-distance, bend allowance, mold lines, and set back; typical repairs to stressed-skin structure; use of special-type rivets.

Attachment of control cable fittings by splicing and swaging; control cable tensioning and safetying.

Inspection and repair of hydraulic components, including shock struts, brakes, pumps and powered control units; flexible hoses and tube bending.

Fabric and dope work; hand and machine-sewn seams; rib-stitching; typical repairs to fabric surfaces; procedures in covering and finishing fabric-covered components to acceptable standards.

The above noted procedures are applied, as time permits, to the inspection and overhaul of airframes to required commercial standards.

AMT-101

AIRFRAME THEORY

60 Hours

Names and functions of airframe components; types of airframe structures; aircraft hardware coding systems, A.N., M.S., aircraft cables and turnbuckles; fundamentals of aircraft sheet metal work; airframe structural repair, stressed-skin and welded-steel tubular types; fabric work, including typical paint schemes; the mechanics of landing gear and flap systems.

Civil Air Regulations; the mechanics of flight control systems; aircraft fuel systems; certification of registered aircraft; aircraft airworthiness after overhaul, repair and modification.

AMT-102

AERO ENGINE SHOP

165 Hours

The names, use and maintenance of hand and power tools; use of micrometers and other precision inspection tools; use of manufacturers' manuals, tables of limits, and service bulletins; detailed procedure and practice in complete disassembly of engines, inspection and reassembly, valve and ignition timing; examination, inspection, and installation of accessories; installation of engines on test bench and test running; construction of engine stands and other workshop equipment as required.

AMT-103

AERO-ENGINE THEORY

60 Hours

Classification of engines, including advantages of each type; desirable features in engine design; brief introduction to component parts; principle of operation of the internal combustion engine, including the theoretical and modified otto cycle; engine power and power measurement, including various definitions; factors affecting power; problems in calculating power; engine component parts, their construction and function; materials used; valve operating mechanisms and valve timing; reduction gears; induction systems and superchargers; lubricants and lubrication systems; basic principles of carburetion; types of mixture control; basic principles of magnetos;



power plant installation and engine control systems; common power plant troubles and possible causes; principle of operation of engine instruments; inspection during overhaul.

AMT-104

AERONAUTICAL THEORY

60 Hours

Classification and description of aircraft; definition of basic aeronautical terms; stability motion and control of the aeroplane about its axis; the function and action of such components as trim tabs, flaps, spoilers, air-brakes, slots and slats; physics of basic aerodynamics to include a review of force, weight, velocity, acceleration, mass, pressure, etc., as applicable in the development of impact pressure and absolute lift and drag coefficient equations; the properties of Standard Atmosphere; application of Charles' and Boyle's laws to air density calculations.

Work, power and energy; calculations of power required for flight; take-off performance calculations.

Aircraft hydraulics; the simple hydraulic system; the individual hydraulic components; engine driven and hand operated hydraulic pumps, reservoirs, filters, power control valves, accumulators, selector valves, relief and restrictor valves, shuttle valves, self-sealing couplings, sequence valves and systems, emergency systems; typical complete hydraulic systems.

Aircraft instrumentation; functions and principles of operation of flight instruments including gyroscopic instruments; remote indication; the magnetic compass, its errors and corrections; the automatic pilot.

AMT-105

AIRCRAFT MATERIALS

60 Hours

Properties and application of synthetic resin glues; properties and characteristics of aircraft woods; some basic physical properties of materials: strengths, stress, strain, elasticity; aircraft material specifications and documentation; properties of various fabrics and fabric testing; functions and compositions of dopes; organic finishes: primers, varnish, lacquer and enamel; natural and synthetic rubbers: terminology, properties, testing and applications

Aluminum: the reduction process, alloying elements, alloy designations, heat treatment and phase diagrams; the effects of cold working temper designations, properties and uses of specific alloys; casting processes, applicable alloys and heat treatments.

Magnesium: its production, alloying elements, alloy designations, heat treatment and uses.

Corrosion: its nature and action; the prevention of corrosion in ferrous metals and light alloys; electroplating and the oxide processes: anodizing and chemical conversion coatings.

Plastics: the various groups, their properties and uses.

ET-107

ELECTRICAL THEORY AND LAB.

90 Hours

Electron theory; electrostatics; electrical units; electrical current and emf; resistance; Ohm's Law; parallel and series circuits; batteries; magnetism and solenoid relays; d-c generators; voltage regulators; d-c motors; principles of induction and capacitors; a-c generator and fundamentals of alternating current; transformers; rectifiers; electrical instruments.

DFTG-102

DRAFTING

90 Hours

Use of instruments; lettering; geometrical constructions; freehand and detail drafting; orthographic projection; sectioning and conventional practices: dimensioning; pictorial drawing; aeronautical drawings; developments and intersections; reproduction methods.

MATH-103

MATHEMATICS

90 Hours

Use of the slide rule; ratio and proportion; variation; dimensional analysis; algebraic fractions; completed fractions; linear equations; functions; graphs; factoring; quadratic equations; areas of plane figures; volumes and surface areas of cylinders; tapered solids; frustrums and spheres; circular functions; graphs; identities; use of 5 figure logarithms.

ENGL-101

ENGLISH

60 Hours

This course is designed to improve the student's ability to write and speak clearly, concisely, and effectively. It includes a deailed study and practice of technical writing principles and style; special techniques of technical writing; types and formats of formal and informal reports; business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

WV-101

WELDING

60 Hours

Use of equipment (including flame control), welding rod and fluxes; brazing; welding of steel, cast iron and aluminum; properties of welds in aeroplane construction; design of welded joints for steel aeroplane structures; heat treated welds; methods of splicing steel tubes, etc.; repair and maintenance of welded structures; preparation of aeroplane parts for welding in repair work; treatment of metal parts after welding to prevent corrosion.

SECOND YEAR

Subject	Unit	Hours
Airframe Shop	AMT-200	210
Airframe Theory	AMT-201	30
Aero Engine Shop	AMT-202	270
Aero Engine Theory	AMT-203	60
Machine Shop	MS-203	60
Metallurgy	MLY-206	60
Mathematics	MATH-203	60
Physics	PHYS-203	60
Chemistry	CHEM-203	30
English	ENGL-201	60
Electronics	EN-215	60
Total		960

AMT-200

AIRFRAME SHOP

210 Hours

Methods of dismantling and assembling various types of airframes; adjustment of angles and settings to rigging instructions, inspections of airframes and components for airworthiness; minor and major periodic inspections; minor and major repair and overhaul of commercial aircraft, recovering operations, replacement of spars, ribs and other components on both composite and all metal structures; incorporation of modifications and methods of repair on airframes and components; inspection, repair and testing of aircraft electrical and hydraulic systems; line maintenance and aircraft run-up; practical weighing for c.g. location, computation of weight, balance and loading; recording of inspections, repairs, modifications, and official forms.

AMT-201

AIRFRAME THEORY

30 Hours

Introduction to aircraft inspection systems; civil aviation procedures; general principles of aircraft weight and balance control, terminology, c.g.; extreme adverse and critical loading computations; loading and weight distribution methods; ballasting, weight shifting and alterations; icing and de-icing systems; electrical, hot air, liquid; cabin pressurization, requirements of high altitude flight; pressure control systems and units; description and operation of basic units, air supply; types of skis; rigging and repairs; aircraft floats, types, descriptions, repairs and preservation; fire warning and extinguishing systems; effects of decompression.

AMT-202

AERO ENGINE SHOP

270 Hours

The complete overhaul and testing of commercial engines, carburetors, magnetos, ignition systems, generators, starters, pumps and accessories to an airworthy standard; interpretation and correct use of parts books, service manuals and the ordering of replacement parts and components; compiling overhaul engineering history for log book entries; test running adjustment, diagnosis and correction of running faults; installation of engines in airframes; inspection, installation, operation, maintenance, removal, disassembly, assembly of the various types of propellers and propeller governors; the construction of engine stands, parts racks, and other equipment such as special tools and jigs necessary for engine overhaul.

Electrical Lab. — low voltage signal systems, lighting and Ohm's Law circuits; voltage and current regulators, reverse current relays; use and care of electrical measuring instruments; d-c generator operations and experiments, d-c machines; troubles, causes, remedies, single phase a-c motors; field trips to commercial operators on the local airport and machine shops in the city.

- AMT-203** **AERO ENGINE THEORY** **60 Hours**
Types of ignition systems; booster ignition system; effect of altitude on power output; manifold pressure analogy and flight performance considerations; fuel injection systems and injection carburetors; propeller description and operation including controllable and hydromatic types; propeller governors; anti-icing equipment; basic principles of jet propulsion; types of jet propulsion powerplants; pulse, rocket, centrifugal and axial flow; gas turbine engine starter systems, electrical and oiling systems; thrust augmentation; after-burners; jet fuels and fuel systems; construction of combustion chambers, blowers and turbines, etc.; general powerplant, fuel, electrical and mechanical troubles, their symptoms, probable causes and effects.
- MS-203** **MACHINE SHOP** **60 Hours**
Study of the parts of a lathe together with their care and operation; how to grind tool bits; some practice in parallel and taper turning, threading, knurling, boring, filing and polishing; making bushings and allowances for fits; truing centers and heat treatment of steel; demonstrations and practice in special jobs in aero work such as special fittings, gauge making, and simple tools; explanations and demonstrations of other machine tools.
- MLY-206** **METALLURGY** **60 Hours**
The production of iron, the blast furnace; making steel, the Bessemer converter, the open hearth and electric furnace.
Properties of metals and terminology, strength, ductility, toughness, etc., and their determination; tensile testing, the stress-strain diagram, Young's modulus of elasticity, the proportional limit, yield and ultimate stress, Poisson's ratio, etc.; hardness and testing, Brinell, Rockwell. Shore scleroscope methods.
Crystalline structure of metals; effects of hot and cold working; liquid and solid solutions; the carbon-iron diagram; constituents of steel and their physical changes at critical temperatures; effects of cooling rates, grain growth, refinement and sizes.
Heat treatment of steel; hardening, tempering, normalizing, annealing, mar-tempering, aus-tempering, spheroidizing; surface hardening methods for steel.
Constituent proportions and physical properties of alloy steels: the stainless steels; basic alloy groups, chemical composition, heat treatment and physical properties; nickel and copper alloys as used in aviation.
- MATH-203** **MATHEMATICS** **60 Hours**
Quadratic equations; applied problems; maxima and minima; higher degree polynomials; remainder theorem; factor theorem; graphs of cubics; laws of indices and radicals; natural logarithms; exponential equations; simultaneous quadratics; arithmetic and geometric progressions; compound interest; loans; annuities and investments; sine and cosine laws; oblique triangles; functions of two angles; double and half angle formulas; trigonometric equations; conic sections; loci.
- PHYS-203** **PHYSICS** **120 Hours**
Mechanics: units and standards; vectors; statics; equilibrium; speed and velocity; acceleration; uniformly accelerated motion; mass; Newton's laws of motion; systems of units; friction; work; energy; power; conservation of energy; torque; rotational equilibrium; rotary motion; moment of inertia; parallel axis theorem; Newton's laws for angular motion; momentum; conservation of momentum.
Heat: temperature measurement; thermal expansion; the gas laws; heat transfer.
Fluids: density; specific gravity; pressure; buoyancy; Pascal's law; barometers and gauges; fluid flow; Bernoulli's equation; air foils.
- CHEM-203** **CHEMISTRY** **30 Hours**
The study of petroleum products — fuels, lubricants and greases; corrosion, its nature and counteraction; paints and protective coatings; the chemistry of aircraft materials; the chemical properties of wood, glues, fabrics, "dope", plastics, steel, nickel, copper, aluminum, magnesium, titanium, natural and synthetic rubbers, and ceramic materials.
- ENGL** **ENGLISH** **60 Hours**
This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal technical reports. It also includes a study of the mass media, and a study and application of the principles of public speaking; types of formal and informal speeches; and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluation.
- EN-215** **ELECTRONICS** **60 Hours**
Familiarization with inductance, capacitance and resistance as used in electronics; basic theory of vacuum tubes; conductors in electronics; basic principle of the transistor; basic electronic circuit principles; amplification, oscillation, detection; circuit resonance, time delay; general application of electronic devices to aircraft.

MECHANICAL DESIGN TECHNOLOGY

This has been called a machine age. Machines and mechanical devices of greater complexity are being used to an increasing extent in all phases of industry. Universities train mechanical engineers who do design and research work, while trade training and apprenticeship programmes produce machinists and other skilled tradesmen. This course is designed to meet an increasing demand for mechanical technicians and mechanical draftsmen who will assist engineers in many details of their work.

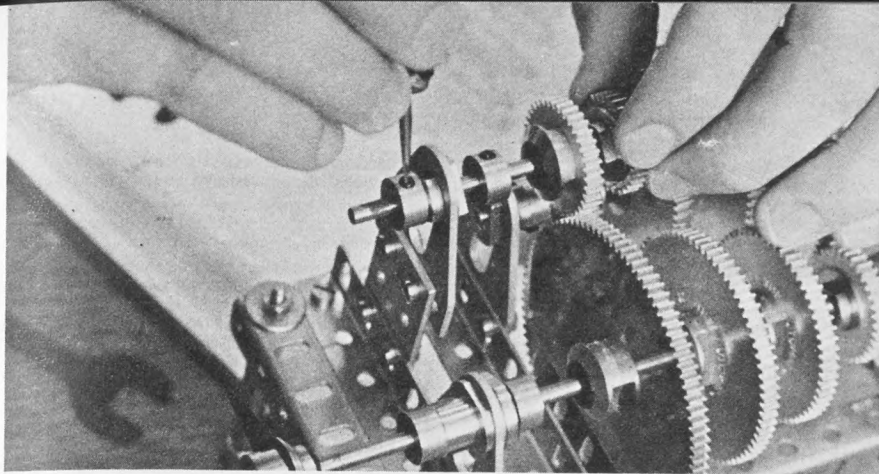
The course provides intensive training in the fundamentals of physics, applied mechanics, metallurgy, strength of materials, mathematics and machine design. These theoretical studies are supplemented by practical work in shops and laboratories, and with drafting-room practice. This gives the student a thorough knowledge of machines and mechanisms, their principles of operation, purposes for which they are used, the processes and procedures used in their manufacture and maintenance, and the procedures and techniques used in machine drawing and design.

The graduate has good opportunities for employment in work that is interesting and challenging. He may be employed in an engineering office doing mechanical drawing, or working on details of design in the development of new products or processes. He may be employed in research, performing tests and experiments and compiling data. He may be employed in inspecting or compiling performance data and reports. He may supervise the installation, operation or maintenance of equipment, or estimate costs. He may become a technical sales representative.

Graduates of this course are eligible for membership in the Alberta Society of Engineering Technologists after two years of suitable industrial experience.

A graduate who wishes to become a journeyman machinist before proceeding further in his career will receive credit towards his apprenticeship training. See page 29 for information on Apprentice Training.

Admission prerequisites and enrolment regulations are given on pages 16 and 22. A statement of high school results or other documentary proof must accompany each application.



MECHANICAL DESIGN TECHNOLOGY

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00

FIRST YEAR

Subject	Unit	Hours
Machines and Mechanisms	MDT-104	60
Metallurgy	MLY-103	120
Manufacturing Processes Laboratory	MS-100	120
Manufacturing Processes Theory	MS-101	60
Drafting	DFTG-101	120
Chemistry	CHEM-108	90
Mathematics	MATH-101	120
FORTAN Programming	CT-100	30
Physics	PHYS-101	120
English	ENGL-101	60
Total		900

MDT-104 MACHINES AND MECHANISMS 60 Hours

Theory; linkages; motion in machines; velocity and acceleration in machines; cams; fundamentals of dimension determination; mechanical fasteners; springs; power screws; couplings; clutches; brakes; belt and rope drives; chain drives; gears; gear trains; bearings and lubrication; vibration damping in machinery. This course is designed as an introduction to the elements and terminology of design, and is not intended to be extremely intensive in any particular areas.

Laboratory: where possible demonstrations will be given to augment the lecture material.

MLY-103 METALLURGY 120 Hours

Theory: Metal structure and crystallization; Plastic deformation; annealing and hot working; constitution of alloys; equilibrium diagrams; the iron-carbide equilibrium diagram; the heat treatment of steel; alloy steels.

Laboratory: Preparation of specimens of steel for microscopic examination; microscopic examination of steel specimens prepared in the laboratory; determination of the mechanical properties of metals; the tension test; impact tests; hardness tests.

MS-100 MANUFACTURING PROCESSES LABORATORY 120 Hours

A series of experiments and demonstrations covering the following processes: fitting, involving the use of normal layout, hand tools and measuring instruments. Tool grinding, with observations of resultant cutting action; drilling; lathe work; shaping; metrology; milling; grinding.

MS-101 MANUFACTURING PROCESSES THEORY 60 Hours

Measuring equipment; the importance and limitations of hand processes for metal working; cutting tools; lathes; off-hand grinding; drilling machines; shaping machines; milling machines; precision grinding machines; foundry and forging processes; elementary metrology.

DFTG-101 DRAFTING 120 Hours

Drafting instruments, their construction and use; geometric constructions; lettering; technical sketching; orthographic projection; axonometric projection; oblique projection;

sectional views; dimensions and notes; tolerancing; intersections and developments; revolutions; threads; fasteners and springs; working drawings; blue-print reading; reproduction of drawings.

CHEM-108**CHEMISTRY**

90 Hours

The atomic theory; structure of atoms, periodic classification of the elements; bonding; structure of compounds, classes of compounds; kinetic theory, states of matter. Crystal structure, metals, alloys; defect crystals, semiconductors. Solutions, acids, bases, salts; electrochemistry, oxidation, reduction; corrosion, nature and prevention; metal analysis, qualitative and quantitative. Introductory organic chemistry; plastics, chemical and physical properties, types, applications; petroleum and petroleum products, lubricants, classification, properties, A.S.T.M. standard tests.

MATH-101**MATHEMATICS**

120 Hours

A study of the elementary functions of modern mathematical analysis with emphasis on the development of manipulative skills and including an introduction into the methods of the calculus; the function, concept and notation; graphs, equations, derivatives and integrals of simple algebraic functions together with manipulative drills and applied problems; graphs, equations and derivatives of simple trigonometric functions with manipulative drills and applied problems; graphs, equations and derivatives of simple logarithmic and exponential functions; use of common and natural logarithms, and slide rule; applied problems.

PHYS-101**PHYSICS**

120 Hours

Measurement; liquids at rest; properties of gases; temperature measurement, thermal expansion; heat quantities; heat transfer; vectors, forces at a point; velocity and acceleration; force and motion; friction; work and power; energy.

ENGL-101**ENGLISH**

60 Hours

This course is designed to improve the student's ability to write and speak clearly, concisely, and effectively. It includes a detailed study and practice of technical writing principles and style, special techniques of technical writing; types and formats of formal and informal reports; business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

MODIFIED SECOND YEAR (1967 only)

Subject	Unit	Hours
Strength of Materials	MDT-201	90
Hydraulics and Pneumatics	MDT-204	90
Heat Engines	MDT-206	90
Metallurgy	MLY-203	90
Welding Laboratory and Theory	W-202	60
Mechanical Drafting and Design	DFTG-201	210
English	ENGL-200	90
Physics	PHYS-201	90
Mathematics	MATH-201	120
FORTTRAN Programming	CT-200	30
Total		960

MDT-201**STRENGTH OF MATERIALS**

90 Hours

Statics; basic principles, resultants of forces, moments of forces; coplanar parallel force systems, beam reactions; coplanar concurrent force systems; coplanar, non-concurrent force systems, truss analysis. Strength of materials; stress and deformation; riveted and welded joints, thin-walled pressure vessels; torsion; centroids and moments of inertia; shear and moments in beams; stresses in beams; deflection of beams; combined stresses.

MDT-204**HYDRAULICS AND PNEUMATICS**

90 Hours

Units, definitions and dimensions; fluid properties; mechanics of fluids; fluid friction in pipes; hydraulic and pneumatic circuits; hydraulic pumps and motors; air compressors; hydraulic and pneumatic valves; pressure accumulators and reservoirs; servo systems; filtration; industrial applications.

MDT-206**HEAT ENGINES**

90 Hours

Basic engine types, engine testing, thermodynamics, heat engine cycles, ideal cycles — Otto, Diesel, Brayton and power plants: Combustion, engine variables. The gas turbine — construction, operation, compressors, combustion, turbines, fuel systems. Steam turbines and power plant, construction, operation; steam tables, the Rankine cycle, Mollier diagram and its application. Compressors, reciprocating and centrifugal, theory and operation.

MLY-203

METALLURGY

90 Hours

Theory: Tool steels, wrought and cast iron, non-ferrous metals, their alloys and their heat treatment; metallurgical factors in corrosion, properties of metals at high and low temperatures, fabrication of metals by rolling, forging, extrusion and drawing, production of castings, inspection and control.

Laboratory: Microscopic examination of non-ferrous metals and alloys. Inspection of failures.

W-202 (1967 only)

WELDING LAB AND THEORY

60 Hours

A study of oxy-acetylene welding and cutting and electric welding as it applies to machine construction, fabrication and repair. This unit will be covered during the first two weeks of the school year, and includes up to thirty hours of practical welding experience.

Oxy-Acetylene Processes: Properties of gases; effect of various types of flames on physical properties of a weld; flame cutting; low temperature brazing; hard surfacing; applications to ferrous and non-ferrous materials, including advantages, limitations and costs.

Electric Processes: Types of arc welding equipment and their uses including manual, semi-automatic, automatic, and inert atmosphere; types of electrodes, their physical properties, and AWS classification; effect of multi-pass welding on weld quality; hard surfacing; resistance welding; applications, including advantages, limitations and costs.

The course includes types of joints, jiggig devices, distortion and its control, stress removal and heat treatments, design of welded structures for dynamic and static loading, testing of welded joints including nick break, guided bend tests, Magnaflux, and X-ray methods.

DFTG-201

DRAFTING AND DESIGN

210 Hours

Review of work in unit L-101; welding drawing; pipe drawing; production aids; sheetmetal drawing; shop processes; cams; gears; V-belt and roller chain drives; bearings; assembly drawing; design problems.

MATH-201

MATHEMATICS

120 Hours

Analytical geometry of the conic sections and a further study of functions with emphasis on the calculus and applied problems; rate of change problems, differentials, approximations, maxima and minima, curve sketching, applied problems in maxima and minima, integration, definite integrals, summations, fundamental theorem, areas, volumes, centroids, moments of inertia; integration of trigonometric, logarithmic and exponential functions, applied problems; integration by substitution, integration by parts, integration by partial fractions, integration of inverse trigonometric functions; simple differential equations (time permitting).

PHYS-201

PHYSICS

90 Hours

Torque; rotation of rigid bodies; momentum; uniform circular motion; projectile motion; vibratory motion; fluids in motion; thermodynamics; problems in applied mechanics; electrical power and energy.

ENGL-200 (1967 only)

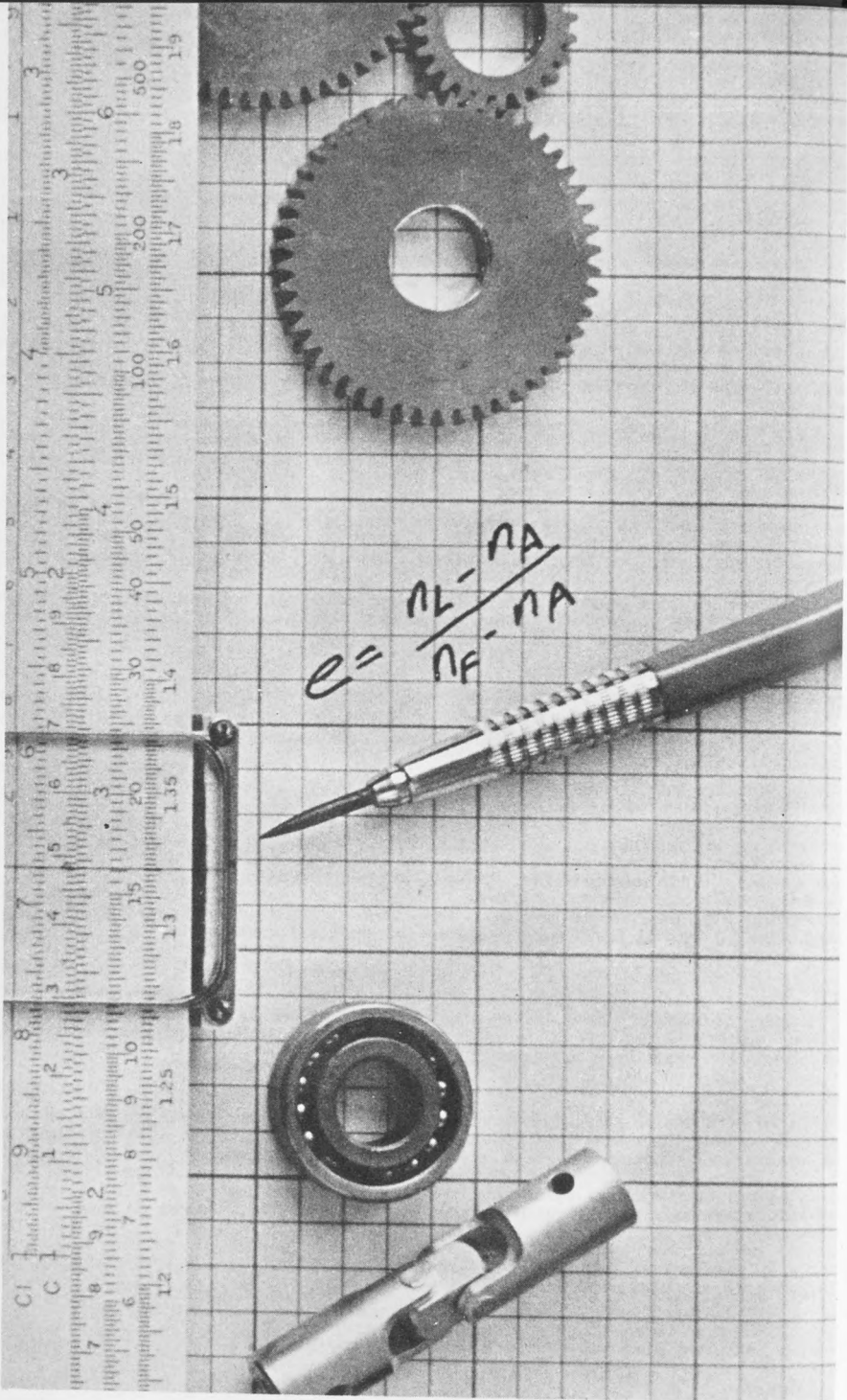
ENGLISH

90 Hours

This is an intensive course which aims to improve students' critical faculties as well as their writing, speaking, and reading skills. The course begins with a review of library research reports, business correspondence, and technical explanations. It includes study of the larger elements of report writing, methods of gathering report data, formal and informal report formats, and the uses of different types of reports — with emphasis on the formal technical report. It also includes a study of the organization and delivery of short speeches (including technical talks) and the conduct of business meetings. The structure and content of published writings, mostly in science and technology, are analyzed and evaluated. Selected readings are also assigned for book reports and class discussions.

SECOND YEAR (Beginning 1968)

Subject	Unit	Hours
Strength of Materials	MDT-201	90
Hydraulics and Pneumatics	MDT-204	90
Heat Engines	MDT-206	90
Metallurgy	MLY-203	90
Electrical Laboratory and Theory	ET-207	60
Drafting and Design	DFTG-201	210
Mathematics	MATH-201	120
Physics	PHYS-201	90
English	ENGL-201	60
Total		900



MECHANICAL TECHNOLOGY

Three-Year Course

September 1967 to May 1968

Fee \$60.00 plus Registration Fee of \$5.00.

(This course terminates in the 1967-68 academic year)

"C" YEAR
1967 - 68 Only

Subject	Unit	Hours
Manufacturing Processes II	MS-300	120
Mechanical Drafting and Design	DFTG-305	180
Strength of Materials	MHT-301	90
Hydraulics and Pneumatics	MHT-300	90
Mathematics	MATH-305	120
Mathematics	MATH-302	120
Physics	PHYS-302	90
English	ENGL-301	90
Total		900

MS-300 MANUFACTURING PROCESSES II 120 Hours
Production planning; selection of materials; finishing operations; quality control statistics; estimating; production schedules; inspection instruments; inspection systems; assessment of machining methods; legal and ethical aspects of inspection; time and work studies.

DFTG-305 MECHANICAL DRAFTING & DESIGN 180 Hours
Introduction; power transmission; materials handling; fasteners; production aids; design problems.

MHT-301 STRENGTH OF MATERIALS 90 Hours
Statics; basic principles, resultants of forces, moments of forces; coplanar parallel force systems, beam reactions; coplanar concurrent force systems; coplanar non-concurrent force systems, truss analysis.

MHT-300 HYDRAULICS AND PNEUMATICS 90 Hours
Units, definitions and dimensions; fluid properties; mechanics of fluids; fluid friction in pipes; hydraulic and pneumatic circuits; hydraulic pumps and motors; air compressors; hydraulic and pneumatic valves; pressure accumulators and reservoirs; servo systems; filtration; industrial applications.

Hydrostatic loads; stability of retaining walls; flexible cables.
Strength of materials; stress and deformation; riveted and welded joints, thin-walled pressure vessels; torsion; centroids and moments of inertia; shear and moments in beams; stresses in beams; deflection of beams; combined stresses.

MLY-300 METALLURGY 120 Hours
Metallurgical inspection and testing; theory of plastic deformation; microstructure and properties of non-ferrous metals, their alloys and their heat treatment; corrosion and wear of metals, and preventive measures available; properties of metals at high and low temperatures; service failures: their examination and interpretation; laboratory work: preparation of specimens for microscopic examination; inspection of failures.

MATH-305 MATHEMATICS 120 Hours
Indefinite integrals of polynomial, exponential and logarithmic functions; the fundamental theorem of integral calculus and the definite integral; applied problems; indefinite integrals of trigonometric and inverse trigonometric functions; general methods of integration; use of a table of integrals; further work of definite integrals, analytic geometry of the conic sections; further applied problems; simple differential equations, important curves.

PHYS-302 PHYSICS 90 Hours
Mechanics: torque, rotation of rigid bodies, momentum, uniform circular motion, vibratory motion.
Fluids in motion; fluid flow, Bernoulli's theorem, orifice discharge; thermodynamics: work and heat, carnot cycles, efficiency; electrical energy and power.

ENGL-301 ENGLISH 90 Hours
This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal technical reports. It also includes a study of the mass media, and a study and application of the principles of public speaking; types of formal and informal speeches; and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluation.

Alberta College of Art

I. H. KERR, HEAD

ART

Art is a cultural occupation. Pursuit of the various visual arts — painting, sculpture, crafts — may be undertaken by anyone as a means of self development and expression. This creates a need for teachers at all levels, including special classes for adults. The majority of professional fine artists augment their income by teaching.

Advertising art is a special category. Perhaps more artists are employed in sales promotion than in all other categories. In Western Canada the best-paid jobs are in this field. The demand for well-trained artists, while not great, is surprisingly steady.

For full information, applicants are advised to write to the Institute requesting the College of Art Prospectus. The following day courses are offered:

Advertising Art	4 years
Applied Art and General Crafts	4 years
Fine Art	4 years
Fine Art Sculpture	4 years
Pottery and Ceramics	4 years

The Art Gallery, with its constantly changing exhibitions, and the Art Library provide invaluable challenge, incentive and example to the students of the College.

Fashion Drawing and Interior Decoration courses are not offered, nor does the College offer correspondence courses.

Admission prerequisites and enrolment regulations are given on pages 18 and 22. A talent test or submission of art samples may be required before admission is granted. Exceptionally-talented persons who do not meet the academic requirements must be at least 17 years of age and must satisfactorily complete an aptitude test given by the College. A statement of high school results, or other documentary proof, must accompany each application.

Applications will be accepted after January 1st, 1967. Because of limited accommodation, applicants are urged to apply early.



Automotive Department

F. B. WYNNE, DEPARTMENT HEAD

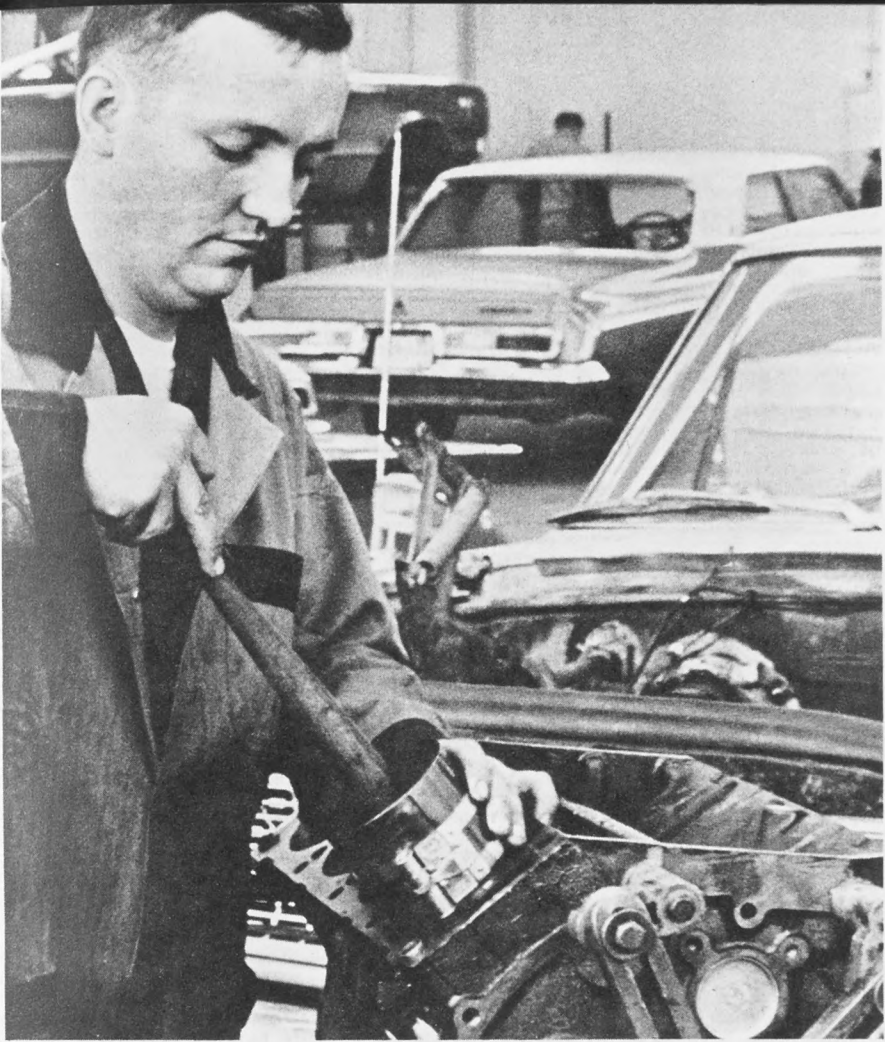
AUTOMOTIVE SERVICE TECHNOLOGY

During the past fiscal year there were over 600,000 licenses issued for motor vehicles in the province of Alberta. The maintenance, repair, and servicing of these vehicles, together with the servicing of visitors' and tourists cars creates a tremendous volume of work with a correspondingly attractive opportunity for employment. Prospective employees in this industry will find competition keen, but well-trained mechanics and technicians will always be in demand.

This course provides for the sound and broad basic training which is necessary to prepare young men to later enter any of the specialist fields which are associated with the automotive industry. The training provides the potential for a graduate to qualify later on for such positions as: service salesman, foreman, service manager, field-service engineer, automotive-equipment specialist and salesman, engine tune-up specialist, wheel-alignment specialist and supervisory positions in the industry. For success in any of the higher positions it is necessary for a graduate to first prove himself as a mechanic. For this reason about half of the total course time is devoted to shop work in which industrial conditions are simulated using the most up-to-date equipment. All repairs are carried out to the manufacturer's specifications, and each job that leaves the shop must give satisfaction to the owner.

The course also provides excellent preparation for a shortened apprenticeship, the Completion of Apprenticeship Certificate including the Interprovincial Standards Red Seal, and the Certificate of Proficiency as a Motor Mechanic. Diploma-holding graduates will be granted two years of credit on a four-year apprenticeship and full credit for all formal apprentice courses.

Admission prerequisites and enrolment regulations are given on pages 17 and 22. A statement of high school marks, or other documentary proof, must accompany each application.



AUTOMOTIVE SERVICE TECHNOLOGY

Two-Year Course

September 1967 to May 1968

Fee for Each Year is \$60.00 plus Registration Fee of \$5.00.

FIRST YEAR

Subject	Unit	Hours
Automobile Theory	AST-101	180
Automobile Shop	AST-100	390
Technical Discussions	AST-102	30
Welding	W-105	30
Mathematics	MATH-106	90
Physics	PHYS-106	120
English	ENGL-101	60
Total		900

AST-101 AUTOMOBILE THEORY 150 Hours

History of the automobile; machine tools, bolts, nuts, screws, and locks; overhaul and adjustment of all components; the four stroke cycle internal combustion engine; reboring and honing; reconditioning of valves, valve seats, tappets and crankshafts; installation of cylinder sleeves, valve seats and valve guides; replacing of cam shaft bearings; connecting rod alignment; valve and ignition timing; timing chain gears and sprockets; replacing and adjustment of bearings; cooling and oiling systems; clutch alignment, overhaul and adjustment; transmission construction, operation and

390 Hours

Uses of files and drills; acetylene welding; soldering; dismantling of chassis units; use of hand and shop tools; repair jobs on late model cars featuring disassembling and checking parts with micrometers, dial gauges, feeler gauges, and by visual inspection; re-boring; honing; fitting pins and bushings; adjusting bearings; refacing and reseating of valves. Transmissions, differentials and brakes are thoroughly inspected and reconditioned with the most modern equipment. Overhaul and adjustment of all parts of the steering mechanism; wheel balancing; frame and wheel alignment; lubrication; headlights; tire repair; installation of batteries; locating troubles; valve and ignition timing; front end service. All repairs are made to the satisfaction of the customer.

30 Hours

Discussions and talks by students on various automotive components and items of equipment. Each student must study his subject and conduct a lecture on it.

30 Hours

Care, use and setting up of oxy-acetylene welding and cutting equipment. Nature of gases; flame types, and uses; joint types and preparation; fusion welding and brazing of cast iron and steels; flame cutting; studies in expansion and contraction. Heavy emphasis on general safety in welding.

90 Hours

Addition, subtraction, multiplication and division of vulgar and decimal fractions; percentage; ratio and proportion; square root; problems arising from practical work; mensuration of areas and volumes; algebraic notation, simple equations and formulae; graphs; interest and discount; logarithms and slide rules; essentials of trigonometry.

120 Hours

Mechanics: Power, work, force, resistance, speed, acceleration, vectors, friction, momentum, curvi-linear motion, heat transfer, Bernolli's equation, Pascal's law, simple pendulum.

60 Hours

This course is designed to improve the student's ability to write and speak clearly, concisely, and effectively. It includes a detailed study and practice of technical writing principles and style; special techniques of technical writing; types and formats of formal and informal reports; business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

SECOND YEAR

Subject	Unit	Hours
Automobile Theory	AST-201	150
Automobile Shop	AST-200	300
Machine Shop	MS-203	60
Mathematics (90 hrs. 1968)	MATH-206	60
Physics (1967-68 only)	PHYS-206	60
Metallurgy	MLY-200	60
Drafting	DFTG-208	90
English	ENGL-201	60
Chemistry (Lab.) (90 hrs. 1968)	CHEM-200	60
Total		900

150 Hours

Introduction; history of electricity and the electron theory of matter; magnetism; electro-magnetism; induction; transformer action; induction of spark coils and transformers; transistor ignition theory and operation, pulse and point type; storage batteries and their chemistry; care and building of batteries and charging; starting motors and controls; diode and transistor theory, d-c generators and voltage controls; a-c generators (alternators); transistorized regulation; gauges, relays, switches, operation and testing; carburetor theory, operation and adjustments; study of car wiring system and diagrams, testing and repairing; automatic transmission theory and operation; hydraulic control systems; power trains; adjustments and repair.



AST-200 **AUTOMOBILE SHOP** **300 Hours**

Assembly of lead acid batteries; disassembly of used batteries to determine the cause of failure; servicing batteries including the different testing methods, and the use of battery chargers; testing the units of the starting system, ignition system and charging system, also the repair and adjustment of these systems; generators, alternators, voltage regulators, transistorized ignition system, pulse and point type; testing electrical accessories found on modern vehicles; repairing, testing and adjusting all types of carburetors; tune-up procedures, diagnosing troubles using modern shop equipment; removing, repairing, installing and adjusting automatic transmissions; diagnosing automatic transmission troubles.

MS-203 **MACHINE SHOP** **60 Hours**

Study of the parts of a lathe together with their care and operation; how to grind tool bits; practice in parallel and taper turning, threading, knurling, boring, filing and polishing; making bushings, running and press fits; truing centres, and heat treatment of steel; use of lathe attachments; fitting of parts and spring winding.

MATH 206 **MATHEMATICS** **60 Hours**

Electrical units; Ohm's Law; calculations involving charging batteries, simple parallel and series circuits as in a car ignition system; simple wiring; capacities of batteries; elementary bookkeeping as applied to a garage business.

PHYS-206 **PHYSICS** **60 Hours**

Mechanics: work, power, energy; torque; linear momentum and impulse; rotation torque and power transmission, uniform circular motion; rotation of rigid bodies.

Fluids: liquids in motion; pressure, rate and velocity; Bernoulli's theorem, practical applications.

MLY-200 **METALLURGY** **60 Hours**

Study of composition, properties, and uses of common metals used in automotive vehicles, such as various types of steels, cast irons, and non-ferrous alloys, including rolled stock, castings, and forgings; study of microstructure and the effects of heat treatment, cold working, and welding; mechanical properties and the testing of metals for strength, hardness, ductility, toughness and fatigue; wear, corrosion, and the failure of parts. Students are required to perform experiments, record data, and interpret the results.

DFTG-208 **DRAFTING** **90 Hours**

Instruments and materials; use of instruments; lettering; applied geometry; orthographic projection; axonometric projection; oblique projection; dimensions and notes; sections and conventions; technical sketching; reproduction of drawings.

ENGL-201 **ENGLISH** **60 Hours**

This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal technical reports. It also includes a study of the mass media, and a study and application of the principles of public speaking; types of formal and informal speeches; and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluation.

CHEM-200 **CHEMISTRY** **60 Hours**

The nature, classification, and refining of crude petroleum and its products, the laboratory study of crude petroleum, gasoline, kerosene, diesel fuel, lubricating oils and greases — based on standard A.S.T.M. petroleum tests. These tests include distillation, Reid vapor Pressure, A.P.I. and specific gravity, preformed gum, pour point, flash point, viscosity, Conradson, carbon residue, crank case dilution, and others of a similar nature.

The application of electrochemical principles to a study of corrosion.

Business Education Department

C. A. HARRINGTON, DEPARTMENT HEAD

BUSINESS ADMINISTRATION

HOTEL, MOTEL AND RESTAURANT ADMINISTRATION

MERCHANDISING ADMINISTRATION

SECRETARIAL ARTS

BUSINESS ADMINISTRATION

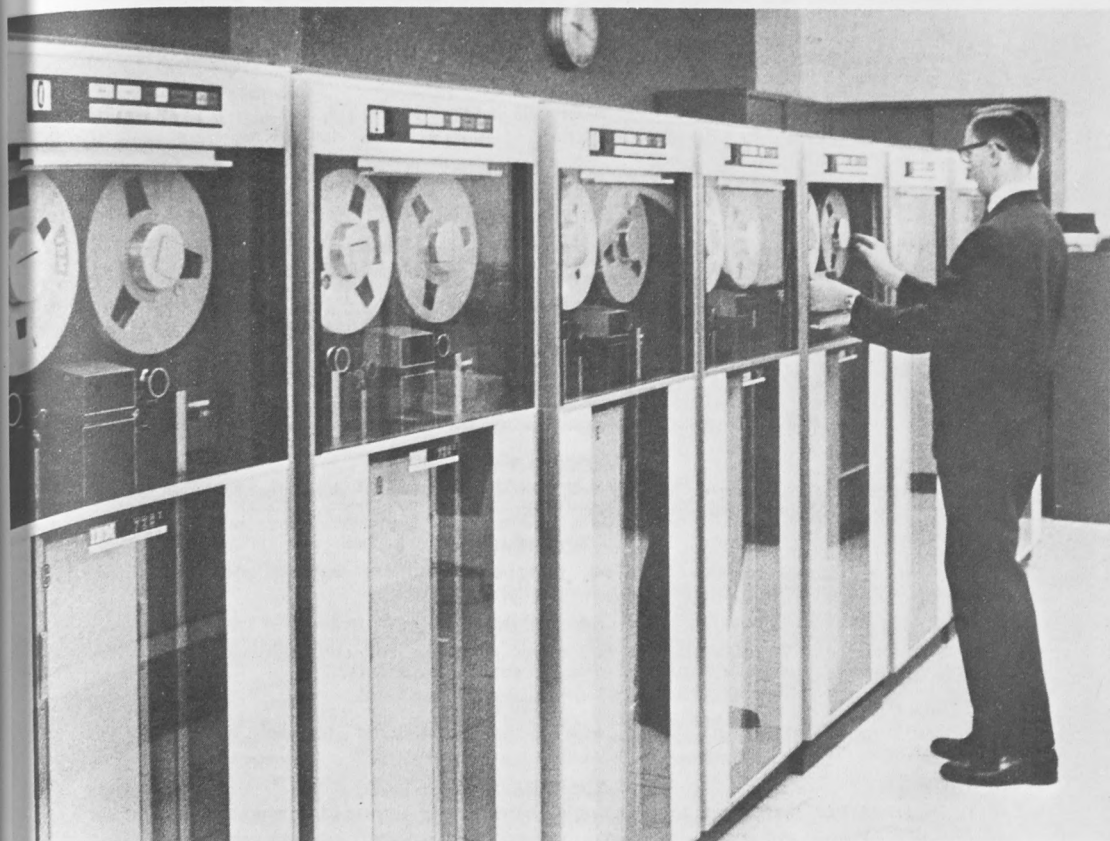
A manager in business, from the foreman or supervisor to the top administrator must have a thorough knowledge of basic business principles and their applications to be successful in today's extremely competitive business world. Sweeping changes are taking place in every industry. These changes are partly technological and partly sociological. Past experience alone is ceasing to be a reliable guide. There is a very real need for both men and women to have a sound background of basic business skills for up-to-date management and a desire and ability to become competent administrators.

This course covers thoroughly the major phases of modern business and devotes considerable time to learning and developing basic managerial skills. The course will enable students to obtain positions with major firms and to advance into management when personal suitability and capabilities are demonstrated. Students should expect to continue building on this base during their entire business careers.

Trainees must learn to meet and serve customers effectively. They will be expected to develop a wide knowledge of the industries in which they are employed and to have a complete understanding of the services their companies offer. Responsibility and the ability to work productively and pleasantly with others is essential.

Graduates of the course may expect to find employment with manufacturing and financial firms, transportation and communication industries, wholesale and retail stores, hotels, motels, institutions and many others.

Admission prerequisites and enrolment regulations are given on pages 18 and 22. A statement of high school results, or other documentary proof, must accompany each application.



BUSINESS ADMINISTRATION

Two-Year Course

Fee for each year is \$75.00 plus Registration Fee of \$5.00.

FIRST QUARTER

Subject	Unit	Hours
Accounting	BA-110-1	108
Economics	BA-100-1	60
Sociology	BA-161-1	60
English	ENGL-102-1	60
Business Law	BA-120-1	48
Total		336

BA-110-1	ACCOUNTING	108 Hours
Financial statements; basic accounting procedures; merchandising operations; special journals; cash; receivables; problems in each area.		

BA-100-1	ECONOMICS	60 Hours
Study of macroeconomics including central economic problems; price; supply and demand; business organization; national income analysis.		

BA-161-1	SOCIOLOGY	60 Hours
Study of science and society; fields and methods of sociology; culture, socialization, personality; role and status; deviation; groups and associations; social power.		
ENGL 102-1	ENGLISH	60 Hours
Primary emphasis on written communication; business letters; reports; special attention to grammar.		
BA-120-1	BUSINESS LAW	48 Hours
Study of mercantile law with attention to law of torts; law of contract; law of agency.		

SECOND QUARTER

Subject	Unit	Hours
Accounting	BA-110-2	108
Economics	BA-100-2	60
Sociology	BA-161-2	60
English	ENGL-102-2	60
Business Law	BA-120-2	48
Total		336

BA-110-2	ACCOUNTING	108 Hours
Inventories; fixed assets; income tax; forms of business; departmental and branch operations; budgeting; problems in each area.		
BA-100-2	ECONOMICS	60 Hours
Study of macroeconomics including: price determination; demand and utility; cost, production and supply; competition; international trade.		
BA-161-2	SOCIOLOGY	60 Hours
Study of social interaction; race and ethnic relations; collective behavior; population; the community; social and cultural change; social movements.		
ENGL 102-2	ENGLISH	60 Hours
Continuation of ENGL 102-1 with attention directed to oral communication; literature.		
BA-120-2	BUSINESS LAW	48 Hours
Study of law pertaining to negotiable instruments; forms of business organization; real property.		

THIRD QUARTER

Subject	Unit	Hours
Accounting	BA-110-3	108
Human Relations	BA-160-3	72
Business Administration	BA-150-3	60
Mathematics	MATH-115-3	48
English	ENGL-102-3	60
Total		348

BA-110-3	ACCOUNTING	108 Hours
Manufacturing operations; cost accounting; standard costs; analysis of financial data; sources of working capital; cash-flow and forecasting; problems in all areas.		
BA-160-3	HUMAN RELATIONS	72 Hours
Human needs; motivation; job satisfaction; informal organization; managerial grid; unions; automation.		
BA-150-3	BUSINESS ADMINISTRATION	60 Hours
Functions of business; legal business forms; role of management; decision making; organizing; planning; controlling; communicating and directing.		
MATH 115-3	MATHEMATICS	48 Hours
Fundamentals of algebra; exponents and radicals; quadratic equations; elements of functions and graphs.		
ENGL-102-3	ENGLISH	60 Hours
Continuation of ENGL-102-2 with emphasis on literary forms and communication.		

SECOND YEAR

Subject	Unit	Hours
Money and Banking	BA-200	120
Accounting	BA-210	180
Advertising	BA-242	60
Human Relations	BA-260	120
General Business Administration	BA-251	150
Statistics	MATH-215	120
English	ENGL-202	90
Introduction to Electronic Data Processing	CT-215	60
Total		900

BA-200 MONEY AND BANKING 120 Hours

The Canadian monetary and banking system; monetary theory; central banking; the money market; foreign exchange; Keynesian economics; cooperative systems.

BA-210 ACCOUNTING 180 Hours

Review of first year; accounting principles; manufacturing operations; cost accounting; cost data and management requirements; analysis of financial data; price-level changes; departmental and branch operations; budgeting; income tax considerations.

BA-242 ADVERTISING 60 Hours

A study of the psychological objectives of advertising; types of appeals and copy themes; motivation; consumer surveys; techniques of presentation; mechanical factors; location; size; measurement of advertising effect; theory of layout; balance; clarity and simplicity; use and misuse of the vehicles of advertising; functions of the advertising executive.

BA-260 HUMAN RELATIONS 120 Hours

The human and social aspects of the business enterprise; executive education; theory of organizations; administrative personnel; relationships and action; internal and external pressures on the administrator; study of cases.

BA-251 GENERAL BUSINESS ADMINISTRATION 150 Hours

The course will cover all areas of business, but emphasis will be on: the financial function (analysis and control); personnel administration; production and marketing; general management. The case method will be used extensively.

MATH-215 STATISTICS 120 Hours

Variables and graphs; population and sample; descriptive and inductive statistics; frequency distributions; measures of central tendency; probability theory; correlation theory; analysis of time series; index numbers.

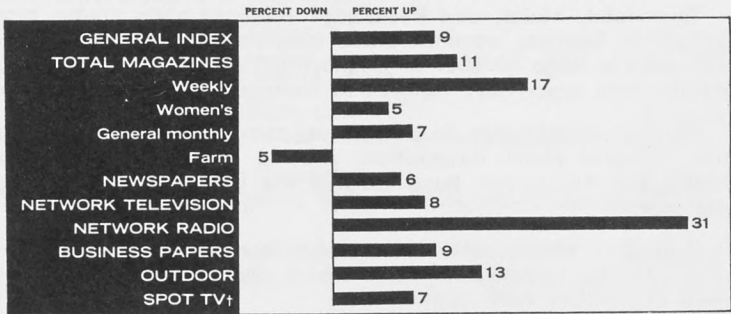
ENGL-202 ENGLISH 90 Hours

This course includes the study of the long, formal report; the modern short story; the modern drama; and the modern novel; various types of speeches; conference techniques.

INTRODUCTION TO ELECTRONIC DATA PROCESSING 60 Hours

An introduction to data processing (integrated, automated and electronic); includes the meaning and use of automated systems terminology and equipment; programs and programming; input-output; case studies on the results of introducing automated systems in business.

Cumulative change in national advertising volume through February



Ad volume up 7% in February

HOTEL, MOTEL AND RESTAURANT ADMINISTRATION

The tourist industry is a rapidly growing multi-million dollar business in Canada.

"Career opportunities for interesting employment in the Accommodation and Food Service industry are on the increase in Canada. Hotels and Restaurants increased by 11,000 in the 10-year period between the 1951 and 1961 census and there has been a continued increase since then, due to a growing population and a greater trend for travel." (From "The Alberta Hotelman," April, 1965.)

Tourism in Western Canada requires large numbers of well-educated men and women to assist in the operation of hotels, motels, restaurants, and other businesses that cater to the industry.

The Hotel, Motel, and Restaurant Administration course provides a background in business administration, supervision, and academic education that will open a large number of employment opportunities and promotion possibilities from supervisory trainees to management in the tourist industry.

Through membership on an advisory committee the Alberta Tourist Association, Alberta Hotel Association, Alberta Motel Association, and Canadian Restaurant Association have assisted the Institute of Technology to develop the course.

Admission prerequisites and enrolment regulations are given on pages 18 and 22. A statement of high school results, or other documentary proof, must accompany each application.



HOTEL, MOTEL AND RESTAURANT ADMINISTRATION

Two-Year Course

Fee for each year is \$75.00 plus Registration Fee of \$5.00.

FIRST QUARTER

Subject	Unit	Hours
Accounting	BA-110-1	108
Economics	BA-100-1	60
Business Law	BA-120-1	48
English	ENGL-102-1	60
Human Relations	HMA-160-1	60
Total		336

BA-110-1	ACCOUNTING	108 Hours
Financial statements; basic accounting procedures; merchandise operations; special journals; cash; receivables; problems in each area.		
BA-100-1	ECONOMICS	60 Hours
Study of macroeconomics including central economic problems; price; supply and demand; business organization; national income analysis.		
BA-120-1	BUSINESS LAW	48 Hours
Study of mercantile law with attention to law of torts; law of contract; law of agency.		
ENGL-102-1	ENGLISH	60 Hours
Primary emphasis on written communication; business letters; reports; special attention to grammar.		
HMA-160-1	HUMAN RELATIONS	60 Hours
Human needs; motivation; job satisfaction; informal organization; managerial grid; unions; automation.		

SECOND QUARTER

Subject	Unit	Hours
Accounting	BA-110-2	108
Economics	BA-100-2	60
Business Law	BA-120-2	48
English	ENGL-102-2	60
Human Relations	HMA-160-2	60
Total		336

BA-110-2	ACCOUNTING	108 Hours
Inventories; fixed assets; income tax; forms of business; departmental and branch operations; budgeting; problems in each area.		
BA-100-2	ECONOMICS	60 Hours
Study of macroeconomics including: price determination; demand and utility; cost, production and supply; competition; international trade.		
BA-120-2	BUSINESS LAW	48 Hours
Study of law pertaining to negotiable instruments; forms of business organization; real property.		
ENGL-102-2	ENGLISH	60 Hours
Continuation of ENGL 102-1 with attention directed to oral communication; literature.		
HMA-160-2	HUMAN RELATIONS	60 Hours
Motivating people to work; job analysis, classification and description; interviewing; safety; discipline; wage and salary administration.		

**THIRD QUARTER**

Subject	Unit	Hours
Hotel Accounting	HMA-111-3	108
Marketing, Advertising and Promotion	HMA-141-3	72
Business Administration	BA-150-3	60
Purchasing	HMA-130-3	60
English	ENGL-102-3	60
Total		360

HMA-111-3	HOTEL ACCOUNTING	108 Hours
Study and practice of machine operation; departmental controls; cash and revenue control; accounts receivable control; analysis of statements; cost; budgets.		
HMA-141-3	MARKETING, ADVERTISING & PROMOTION	72 Hours
A study of advertising strategy involving advertising psychology; make-up of components; mechanical preparation; media selection; marketing principles.		

BA-150-3	BUSINESS ADMINISTRATION	60 Hours
Functions of business; legal business forms; role of management; decision making; organizing; planning; controlling; communicating and directing.		
MATH-115-3	MATHEMATICS	48 Hours
Fundamentals of algebra; exponents and radicals; quadratic equations; elements of functions and graphs.		
ENGL-102-3	ENGLISH	60 Hours
Continuation of ENGL-102-2 with emphasis on literary forms and communication.		

SECOND YEAR

Subject	Unit	Hours
Hotel, Motel and Restaurant Accounting	HMA-211	150
Marketing, Advertising and Promotion	HMA-241	150
Personnel Administration	HMA-261	90
Beverage Management and Control	HMA-212	60
Purchasing	HMA-230	120
Business Administration	MA-250	120
Kitchen Management and Food Service	CC-280	120
English	ENGL-202	90
Total		900
HMA-211	HOTEL, MOTEL AND RESTAURANT ACCOUNTING	150 Hours
Cost accounting; departmental operations; bank reconciliation; machine accounting; consolidated statements; taxation; daily transcript; credit and collection; problems in all areas of study.		
HMA-241	MARKETING, ADVERTISING AND PROMOTION	150 Hours
The management of promotion through advertising and personal contact, based on the case method; researching advertising effectiveness in media, message, mechanics and cost; marketing research; social and psychological considerations of selling; consumer motivation.		
HMA-261	PERSONNEL ADMINISTRATION	90 Hours
The personnel administrator; interviewing; labor turnover and internal mobility; complaints and grievances; recruitment; selection; placement; induction and training; performance appraisal and promotion; discipline; wage administration incentives; health and safety; employee benefit and retirement plans; case problems.		
HMA-212	BEVERAGE MANAGEMENT AND CONTROL	60 Hours
Control; storage; five basic wines; malt beverages and liquor; glass and bottle sales; beverage room operation; liquor laws.		
HMA-230	PURCHASING	120 Hours
The purchasing function; purchasing and management; organization for purchasing; buying the right quality and quantity; standardization; stores control and issuing; selecting the right source; planning and forecasting; purchased materials budget; purchasing systems; evaluating purchasing performance; material and furnishing selections; case study.		
MA-250	BUSINESS ADMINISTRATION	120 Hours
Development of business organization and professional management; nature and goals of planning; planning processes, organization and departmentation; selecting staff; checking and corrective action; coordinating; controlling; discussions of administrative problems in industry and commerce.		
CC-280	KITCHEN MANAGEMENT AND FOOD SERVICE	120 Hours
Selecting, hiring and training of employees; the responsibilities of a Head Chef and other food production personnel; portion control; buffet preparation; catering; kitchen thrift and economy; purchasing procedures; receiving methods; food accompaniments; wine service; banquet service; the responsibilities of Dining Room Manager; institutional meats.		
ENGL-202	ENGLISH	90 Hours
This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal business reports. It also includes a study of the mass media, and a study and application of the principles of public speaking; types of formal and informal speeches; and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluations.		

MERCHANDISING ADMINISTRATION

A merchandising administrator must be able to organize and manage many phases of business. The course, therefore, provides broad business training. The number and variety of positions available for both men and women is practically unlimited. However, competition is very keen as nearly half the labour force is employed in business. A high level of training not only enables students to obtain positions with major firms but is essential for promotion. Thorough knowledge, wide experience and personal integrity are necessary for advancement into business management.

Graduates of this course may, after suitable experience, rise to managerial positions where the salaries are commensurate with executive positions in industry.

The objectives of this course are: to provide men and women with a broad background for merchandising, thus enabling them to accept positions in retailing, wholesaling, manufacturing and government administration; to develop high ethical standards; to provide a good understanding of the law as it relates to merchandising; to develop qualities of leadership for life in the economic community.

Admission prerequisites and enrolment regulations are given on pages 18 and 22. A statement of high school results, or other documentary proof, must accompany each application.



MERCHANDISING ADMINISTRATION

Two-Year Course

Fee for each year is \$75.00 plus Registration Fee of \$5.00.

FIRST QUARTER

Subject	Unit	Hours
Accounting	BA-110-1	108
Economics	BA-100-1	60
Drafting	DFTG-104-1	48
English	ENGL-102-1	60
Business Law	BA-120-1	48
Total		324

BA-110-1	ACCOUNTING	108 Hours
Financial statements, basic accounting procedures; merchandise operations; special journals; cash; receivables; problems in each area.		
BA-100-1	ECONOMICS	60 Hours
Study of macroeconomics including central economic problems; price; supply and demand; business organization; national income analysis.		
DFTG-104-1	DRAFTING	48 Hours
Freehand lettering; theory of projection drawing; freehand sketching; orthographic drawing; sections and conventions		
ENGL 102-1	ENGLISH	60 Hours
Primary emphasis on written communication; business letters; reports; special attention to grammar.		
BA-120-1	BUSINESS LAW	48 Hours
Study of mercantile law with attention to law of torts; law of contract; law of agency.		

SECOND QUARTER

Subject	Unit	Hours
Accounting	BA-110-2	108
Economics	BA-100-2	60
Drafting	DFTG-104-2	48
English	ENGL-102-2	60
Business Law	BA-120-2	48
Total		324

BA-110-2	ACCOUNTING	108 Hours
Inventories; fixed assets; income tax; forms of business; departmental and branch operations; budgeting; problems in each area.		
BA-100-2	ECONOMICS	60 Hours
Study of macroeconomics including: price determination; demand and utility; cost, production and supply; competition; international trade.		
DFTG 104-2	DRAFTING	48 Hours
Pictorial drawing; dimensions and notes; applications; drafting of building layouts.		
ENGL 102-2	ENGLISH	60 Hours
Continuation of ENGL 102-1 with attention directed to oral communication; literature.		
BA-120-2	BUSINESS LAW	48 Hours
Study of law pertaining to negotiable instruments; forms of business organization; real property.		

THIRD QUARTER

Subject	Unit	Hours
Accounting	BA-110-3	108
Mathematics	MATH-116-3	72
Merchandising	MA-131-3	72
English	ENGL-102-3	60
Business Administration	MA-150-3	48
Total		360

BA-110-3	ACCOUNTING	108 Hours
Manufacturing operations; cost accounting; standard costs; analysis of financial data; sources of working capital; cash-flow and forecasting; problems in all areas.		
MATH 116-3	MATHEMATICS	72 Hours
Fundamental concepts; equations of first degree, quadratic equations; logarithms; progressions; binomial theorem; computers.		
BA-131-3	MERCHANDISING	72 Hours
Basic profit elements; profit and loss statement; determining mark-up; averaging mark-up; planning initial mark-up.		
ENGL-102-3	ENGLISH	60 Hours
Continuation of ENGL 102-2 with emphasis on literary forms and communication.		
MA-150-3	BUSINESS ADMINISTRATION	48 Hours
Functions of business; legal forms; role of management; decision making; organizing; planning; controlling; communicating; directing.		

SECOND YEAR

Subject	Unit	Hours
Merchandising	MA-231	150
Marketing	MA-233	120
Business Administration	MA-250	90
Human Relations	BA-260	120
Accounting	BA-210	120
Theory of Business Machines	MA-270	90
Mathematics of Finance	MATH-216	60
Principles of Artistic Design	A-220	60
English	ENGL-202	90
Total		900

MA-231	MERCHANDISING	150 Hours
Six months merchandise plan; planning and control of sales, markdowns, inventories, purchases and expenses; unit control systems; retail buying organization, what, where, when and how; business problems in every area of study.		
MA-233	MARKETING	120 Hours
The marketing environment; marketing functions; marketing institutions; commodity marketing; marketing policies; introduction to the case method of study.		

MA-250 BUSINESS ADMINISTRATION 90 Hours

Development of business organization and professional management; nature and goals of planning; planning processes, organization and departmentation; the role of staff; the role and selection of executive personnel; control standards of efficiency; checking and corrective action; co-ordination and co-operation; discussions of administrative problems in industry and commerce.

BA-260 HUMAN RELATIONS 120 Hours

The human and social elements in the operation of industrial enterprises; education for executives; theory of organizations; administrative personnel, relationships and action; internal and external pressures on the administrator; study of cases.

BA-210 ACCOUNTING 120 Hours

Review; receivables and investments; inventory accounting; fixed assets; liabilities; manufacturing operations; cost accounting; accounting principles; analysis of financial statements; departmental operations; consolidated statements; business problems in relation to every field of study.

MA-270 THEORY OF BUSINESS MACHINES 90 Hours

Source documents; principles of systems design; write-it-once equipment; mechanical accounting equipment; punched cards; fundamentals of electronic data processing; fundamentals of COBOL programming.

MATH-216 MATHEMATICS OF FINANCE 60 Hours

Simple interest; discount; partial payments; compound interest and compound discount; ordinary annuities; further types of annuities; amortization and sinking funds; valuation of bonds, mathematics of depreciation; annuities, general case, life insurance.

A-220 PRINCIPLES OF DESIGN 60 Hours

A study of design principles (rhythm, harmony, dominance, opposition, balance and unity) through the use of line, tone, texture, space and color, directed to an understanding of both decorative and functional applications as in advertising layout, display, product design, furniture and fixtures, architecture or general planning.

ENGL-202 ENGLISH 90 Hours

This course includes the study of the long, formal report; the modern short story, the modern drama, and the modern novel; various types of speeches and conference techniques.

COMPANY P AND SUBSIDIARY
Consolidated Working Papers
For the Year Ended December 31, 1964

	Company P	Company S	Intercompany Eliminations			Consolidated
INCOME STATEMENT:						
Sales	287000	215000	A 30000			472000
Cost of goods sold	225000	180000	B 300	A 30000		375300
Gross profit on sales	62000	35000				76700
Expenses	42000	30000				72000
Net income from operations	20000	5000				24700
Dividend from Company S	2000		C 2000			
Net income	22000	5000				24700
STATEMENT OF RETAINED EARNINGS:						
EARNINGS:						
Retained earnings - beginning of year	40000	12000				52000
Net income - per above	22000	5000				24700
Total	62000	17000				76700
Dividends:						
Company P	10000					10000
Company S		2000		C 2000		
Retained earnings - end of year	52000	15000				64700
BALANCE SHEET:						
Assets						
Cash	32000	16000				48000
Accounts receivable	43000	35000				78000
Note receivable - Company S	10000			D 10000		
Inventory	50000	41000		B 300		90700
Investment in Company S	50000			E 50000		
	185000	92000				216700

SECRETARIAL ARTS

In modern industry, there is an increasing demand for accurate records and direct communication at the executive level. This in turn has created an even greater increase in the demands for well-trained secretaries. A secretary for management must be highly trained in the skills of shorthand, typing and office procedure.

Secretarial Arts provides the training required to enable graduates to reach this career goal. Areas of training include basic secretarial skills, business and industrial knowledge and personal development, all of which are necessary to advance to positions of responsibility.

The opportunities for employment in this field are as varied as the institutions in the economy. However, the locality will generally dictate the field into which the graduate will enter.

Prospective employers will be found in manufacturing, transportation and communications, retailing, wholesaling, government, the professions and education.

Admission prerequisites and enrolment regulations are given on pages 18 and 22. A statement of high school results, or other documentary proof, must accompany each application.

ADVANCED STANDING: Commencing in September, 1968, graduates from Alberta High Schools in which recognized Business Education programs are offered, may be admitted to an enriched second year program, provided they possess:

- (a) An Alberta High School Diploma
- (b) At least a "B" standing in English 30 or 33, Mathematics 20, 21 or 22, Typing 30, Shorthand 30, Business Machines 30 and Office Practice 30.



SECRETARIAL ARTS

Two-Year Course

Fee for each year is \$75.00 plus Registration Fee of \$5.00.

FIRST QUARTER

Subject	Unit	Hours
English	ENGL-150-1	60
Typing	SA-100-1	48
Sociology	BA-161-1	60
Office Procedures	SA-130-1	72
Accounting	BA-111-1	108
Total		348
ENGL-150-1	ENGLISH	60 Hours
Primary emphasis will be in written communications; letters and reports; grammar.		
SA-100-1	TYPING	48 Hours
Learning of keyboard; basic techniques of the touch system.		
SA-130-1	OFFICE PROCEDURES	72 Hours
Flow of work; filing and correspondence procedures; mailing procedures; office routine and practice.		
BA-161-1	SOCIOLOGY	60 Hours
Study of science and society; fields and methods of sociology; culture, socialization, personality; role and status; deviation; groups and associations; social power.		
BA-111-1	ACCOUNTING	108 Hours
Balance sheet; debits; credits; ledger; cash; petty cash; accounts receivable; locating errors; payroll; problems in each area of study.		

SECOND QUARTER

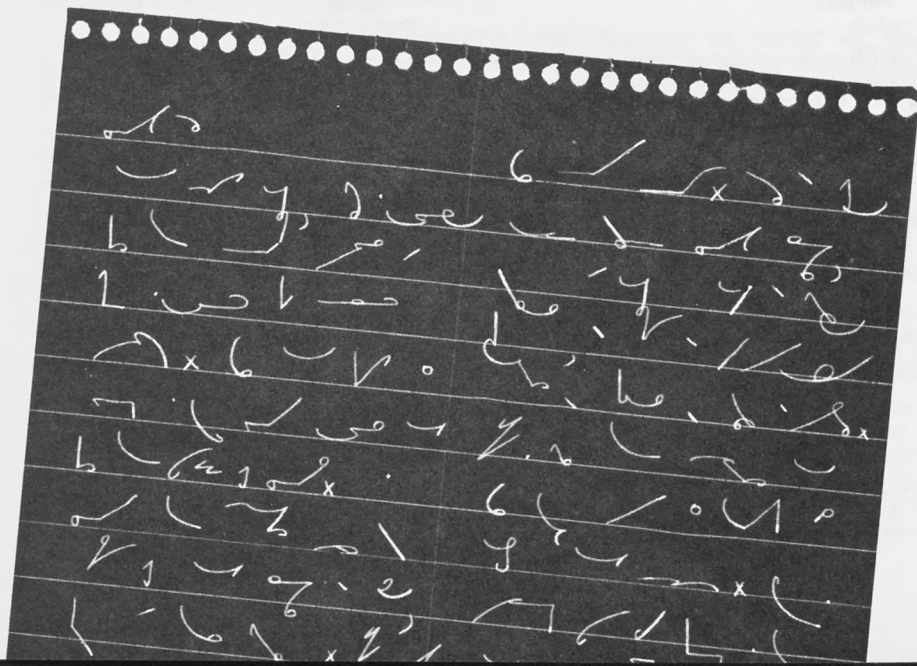
Subject	Unit	Hours
English	ENGL-150-2	60
Typing	SA-100-2	48
Sociology	BA-161-2	60
Shorthand	SA-140-2	72
Office Procedures	SA-130-2	72
Total		312

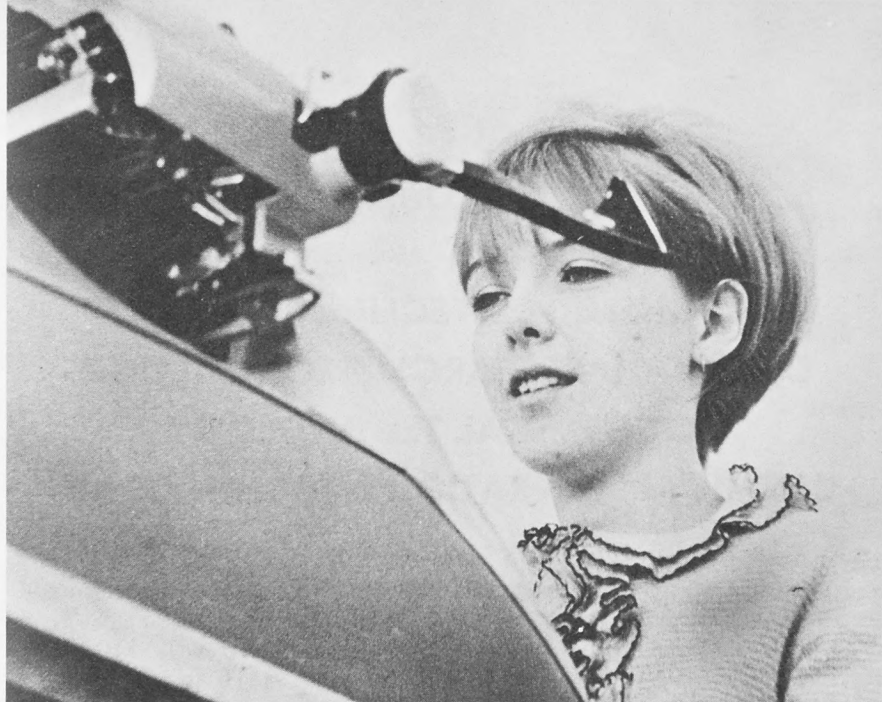
ENGL-150-2	ENGLISH	60 Hours
Continuation of ENGL-150-1 with emphasis on speech and literature.		
SA-100-2	TYPING	48 Hours
Continuation of typing A with emphasis on speed and accuracy. Understanding of correspondence; manuscripts; tabulation; building of speed skills.		
BA-161-2	SOCIOLOGY	60 Hours
Study of social interaction; race and ethnic relations; collective behavior; population; the community; social and cultural change; social movements.		
SA-140-2	SHORTHAND	72 Hours
To give students an understanding of basic shorthand and an opportunity to apply skills.		
SA-130-2	OFFICE PROCEDURES	72 Hours
Continuation of office procedures A with emphasis on systems and management; communication.		

THIRD QUARTER

Subject	Unit	Hours
English	ENGL-150-3	60
Typing	SA-100-3	48
Business Machines	SA-170-3	72
Shorthand	SA-140-3	72
Economics	BA-102-3	48
Total		300

ENGL-150-3	ENGLISH	60 Hours
Continuation of ENGL-150-2.		





SA-100-3	TYPING	48 Hours
Continuation of SA-100-2 with emphasis on speed and accuracy.		
SA-170-3	BUSINESS MACHINES	72 Hours
To give skill in operation of adding machines; calculations; office reproduction equipment; some accounting machines.		
SA-140-3	SHORTHAND	72 Hours
Continuation of Shorthand SA-140-2 with emphasis on speed and accuracy.		
BA-102-3	ECONOMICS	48 Hours
Introduction to macroeconomics; economic history and economic geography.		

FOURTH QUARTER

English	ENGL-250-4	60
Option		60
Business Law	BA-220-4	48
Economics	BA-202-4	48
Human Relations	SA-260-4	60
Orientation	SA-210-4	24
Total		300

FIFTH QUARTER

English	ENGL-250-5	60
Advanced Typing	SA-200-5	72
Advanced Shorthand	SA-240-5	72
Business Law	BA-220-5	48
Human Relations	SA-260-5	60
Total		312

SIXTH QUARTER

Advanced Shorthand	SA-240-6	72
Advanced Typing	SA-200-6	72
Option		60
Option		60
Total		264

Further information about the Fourth, Fifth and Sixth Quarters was not available at time of publication.

Chemistry Department

D. A. CLARKE, DEPARTMENT HEAD

CHEMICAL TECHNOLOGY

CHEMICAL RESEARCH TECHNOLOGY

BIOCHEMICAL TECHNOLOGY

CHEMICAL OPERATIONS TECHNOLOGY

The four programs offered by the Chemistry Department have a common first year. On the basis of interest, anticipated employment opportunities and his scholastic record in first year, the student may choose which option he will follow in second year. The first three programs have a laboratory orientation and are designed to train technologists to work with professional chemists throughout a broad range of industry and research. The Chemical Operations Technology program is oriented toward production operations in chemical industry and research and is designed to train technologists to work with chemical engineers.

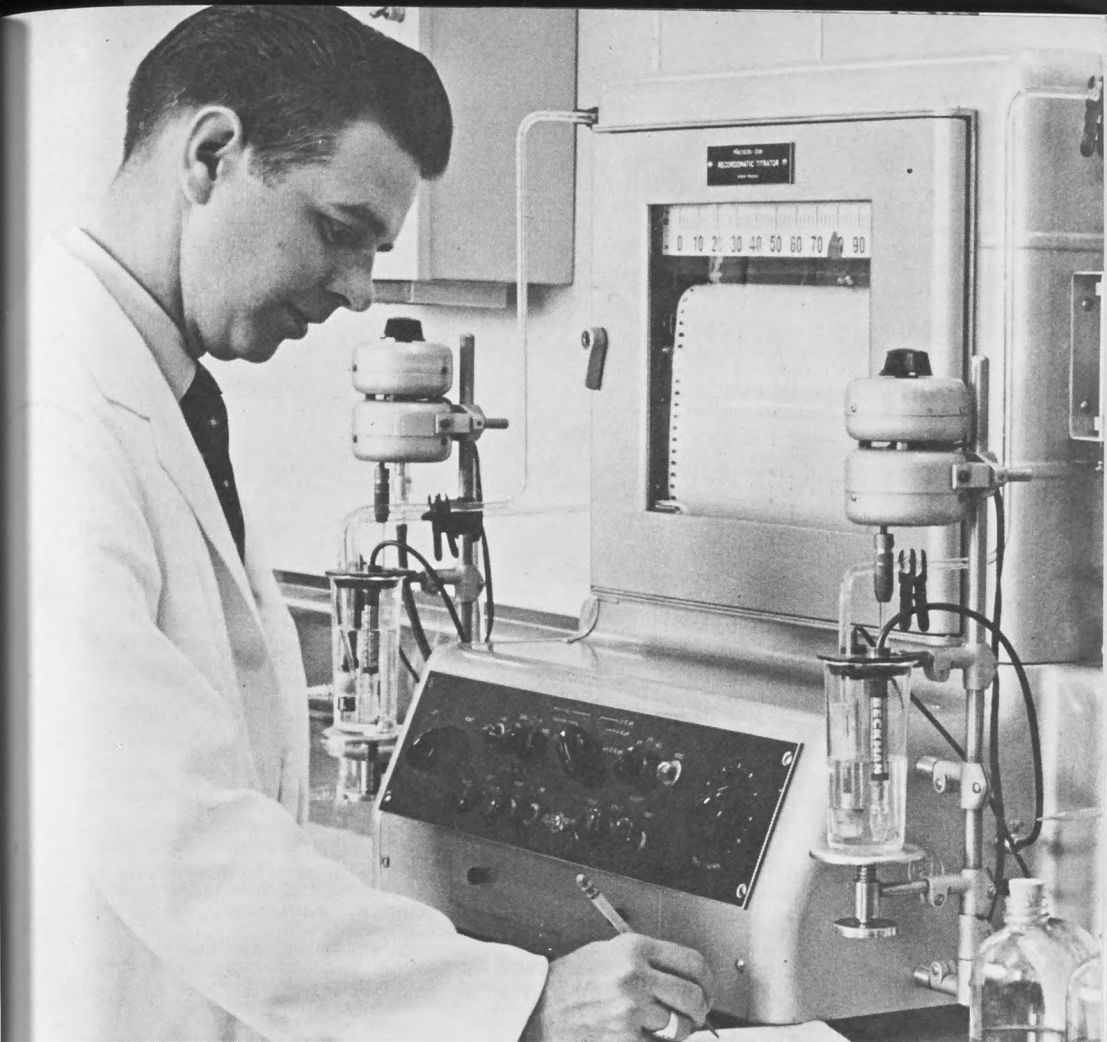
CHEMICAL TECHNOLOGY

Extensive expansion of all phases of the chemical industry in Canada has caused a continually increasing demand for highly skilled chemical technologists. Opportunities exist from coast to coast for young men and women in many industries including petroleum and natural gas processing, petrochemicals, and metallurgical refining as well as in universities and various government departments and agencies.

Not only are graduates rewarded by excellent salaries, but in many situations there will be ample opportunity for advancement to positions of greater challenge and responsibility. The broad training in fundamental chemical principles, basic laboratory techniques and modern chemical instrumentation will enable the graduate to continue to develop and adapt with the exciting advance of technology in the field of chemistry.

After graduation the chemical technologist may, through the Chemical Institute of Canada, obtain certification which is recognized throughout Canada.

Admission prerequisites and enrolment regulations are given on pages 16 and 22.



CHEMICAL TECHNOLOGY

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

FIRST YEAR

Subject	Unit	1st	2nd	3rd	Total Hours
General Chemistry	CHT-104	50	40	30	120
Analytical Chemistry	CHT-100	80	80	80	240
Organic Chemistry	CHT-101	50	60	70	180
Mathematics	MATH-108	40	40	40	120
*Physics	PHYS-178	50	50	50	150
English	ENGL-100	30	30	30	90
Total					900

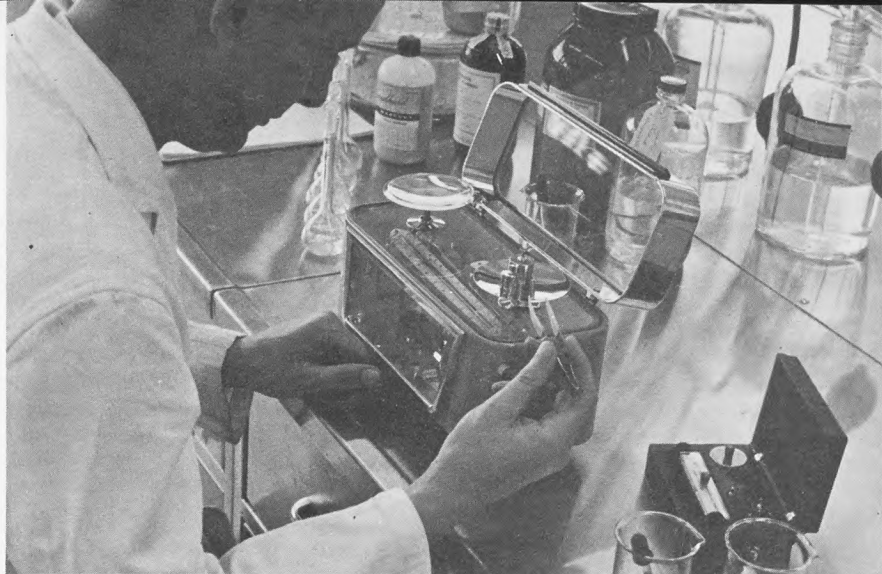
*N.B.—Students entering the course with at least a "B" standing in Physics 30 or 32 from High School will take an advanced Physics course PHYS-108. This course will include FORTRAN Programming, CT-100 (30 hours), and will be a required subject.

CHT-100	ANALYTICAL CHEMISTRY	240 Hours
Gravimetric theory — weighing, nature of precipitates; sampling; errors in analytical operations; evaluation of analytical data; reagents; calculations; equilibria in analytical systems.		
Laboratory techniques; gravimetric analysis including electrodeposition; volumetric analysis — oxidation reduction, neutralization, volumetric precipitation, complexometric methods; pH meters; reporting of results; safety.		
CHT-104	GENERAL CHEMISTRY	120 Hours
Atomic and molecular structure; properties; states of matter; behaviour of solutions; kinetics; equilibria.		
Determination of atomic and molecular weights; properties of solutions; kinetics and equilibrium constants; inorganic preparations; qualitative analysis.		
CHT-101	ORGANIC CHEMISTRY	180 Hours
Techniques of organic chemistry — boiling points, distillation, fractional distillation, melting points, crystallization, solvent extraction; qualitative detection of elements in organic compounds; preparation, purification, and testing of organic compounds.		
Organic chemistry theory involving aliphatic and aromatic hydrocarbons and industrial organic chemicals, rubber, plastics and related synthetic chemicals. The characteristics of organic compounds and the nomenclature of aliphatic hydrocarbons and their derivatives. The structure of organic molecules, spatial effects, inductive effects, isomerism, resonance. Reaction mechanisms, reaction of functional groups.		
MATH-108	MATHEMATICS	120 Hours
Review of indices: treatment of experimental data, and significant figures; operation of the slide rule; common and natural logarithms.		
Trigonometry: circular measure of angles; definitions of trig. functions; solution of right angles and oblique angle triangles; trig. ratios of compound angles.		
Analytical geometry: straight line; conic sections.		
Calculus: gradients of curves; methods of differentiations; maxima and minima; rates of change; integration of functions and practical applications; trigonometric, logarithmic and exponential functions.		
PHYS-178	PHYSICS	150 Hours
Mechanics: Basic concepts, forces, friction, linear motion, angular motion, elasticity, work, energy, power, momentum. Heat: Expansion of solids and liquids, specific heat, heat transfer, gases. Electricity: Electric current, instruments, magnetism electrostatics, induction, alternating current, electrochemistry.		
*PHYS-108	PHYSICS	150 Hours
(alternate course for students with at least a "B" standing in Physics 30 or 32 from High School).		
Mechanics: Vectors, motion, laws of motion, momentum, energy, rotation. Heat: Monatomic gas, nature of heat. Electricity: Stationary electric charges, fields, electric currents, moving charges, magnetism, changing fields. Optics: Nature of waves, electromagnetic waves. Modern Physics: Time and space, relativistic mechanics, quantum mechanics.		
ENGL-100	ENGLISH	90 Hours
This is an intensive course designed to improve the students' critical thinking as well as their writing and reading skills. The course begins with instruction on how to study. It demonstrates how elementary logic, fundamental writing techniques, outlining, summarizing, paragraphing, vocabulary, grammar, spelling, capitalization and punctuation are applied to the writing of short, informal library research reports, business correspondence, and technical explanations. It also includes critical evaluations of the structure and content of published writings, especially in science and technology.		

SECOND YEAR

(Interim for 1967-68 only)

Subject	Unit	Term			Total Hours
		1st	2nd	3rd	
Instrumental					
Chemical Analysis	CHT-201	110	110	110	330
Organic Chemistry	CHT-208	80	80	50	210
Physical Chemistry	CHT-213	30	30	60	120
Physics	PHYS-208	60	30	30	120
English	ENGL-201	20	20	20	60
Electronics	EN-212	—	30	30	60
Total					900



CHT-201 INSTRUMENTAL CHEMICAL ANALYSIS 330 Hours

Laboratory manipulation in instrumental methods of chemical analysis, photo-electric colorimeters, refractometry, polarimetry, potentiometric titration methods, conductance methods, polarography, chromatography, fluorescence methods, infrared spectrophotometry, ultra-violet spectrophotometry, emission spectroscopy, flame photometry, atomic absorption, mass spectrometry, radiochemical methods.

Theoretical principles of the above methods and X-ray diffraction.

CHT-208 ORGANIC CHEMISTRY 210 Hours

The preparation and purification of industrial organic compounds, special procedures, commercial preparations including certain synthetic drugs and pharmaceuticals, insecticides, and synthetic polymers.

Theoretical studies in organic chemistry theory, extending the first year program, and relating to the laboratory work.

CHT-213 PHYSICAL CHEMISTRY 120 Hours

Molecular structure; the gas laws; studies in thermodynamics; thermo-chemistry; general characteristics of liquids; surface tension; viscosity; composition of solutions; immiscible liquids; Raoult's law; colloids — kinetic behaviour; osmotic pressure; sedimentation equilibrium; electro-phoresis; absorption; emulsions; gels; industrial colloids; chemical equilibria; phase diagrams; chemical kinetics; reaction rates; catalysis, industrial applications; electrical conductance; transference numbers; ionic conductances; ionic equilibria buffer solutions; Debye-Huckel theory; photochemistry; nuclear structure.

High Vacuum Techniques:

Theory: discussion of theory behind and construction of equipment used in the laboratory; conductance of tubing for gas flow; calculation of pumping speed, matching of pumps; discussion of reactions performed in the laboratory experiments.

Laboratory — assembly and modification by glass blowing of at least part of a high-vacuum rack; operation of standard equipment used in high vacuum assemblies; fore pumps, mercury and oil diffusion pumps; toeppler pump; pressure measurement devices, manometer, McLeod gauge, ionization gauge, thermocouple gauge; measurement of flow rate; transfer of materials in a high vacuum system.

PHYS-208 PHYSICS 120 Hours

Electricity: electric charges and fields; electrical potential; current; sources of current; Ohm's Law; simple d-c circuits; electric measurement; Wheatstone bridge; potentiometer; magnetic effects of current; electric energy and power; induced emf's; electromagnetic induction; capacitance; a-c series circuits; conduction in gases.

Light: light and illumination; reflection; refraction; thin lenses; the eye and optical instruments; dispersion; spectra; colour; interference and diffraction; polarized light.

ENGL-201 ENGLISH 60 Hours

This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal technical reports. It also includes a study of the mass media, and a study and application of the principles of public speaking; types of formal and informal speeches; and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluation.

EN-212 ELECTRONICS 60 Hours

Review of the fundamentals of electricity; theory of vacuum tubes; laboratory work involving the construction and testing of the basic circuits used in the electrical methods of industrial chemical analysis: the study of photo-electric colorimeters, spectrophotometers, pH meters, electroanalyzers, electrometric titrimeters, Geiger counters, and scintillometers; a brief survey of the mass spectrometer.

CHEMICAL RESEARCH TECHNOLOGY

This optional second year course is limited to students showing special ability in first year Chemical Technology. The graduate is especially oriented to working with research teams in many areas of chemical research and development. Additional training is given in glass blowing and mathematics and all other subjects are enriched and more intensive than the corresponding subjects in second year Chemical Technology.

FIRST YEAR

Identical to first year of Chemical Technology (see P. 101 and 102)

SECOND YEAR

(Interim for 1967-68 only)

Subject	Unit	Term			Total Hours
		1st	2nd	3rd	
Instrumental					
Chemical Analysis	CHT-221	100	100	100	300
Organic Chemistry	CHT-228	80	50	70	200
Physical Chemistry	CHT-223	20	40	50	110
Physics	PHYS-208	60	30	30	120
Mathematics	MATH-208	20	30	—	50
Electronics	EN-212	—	30	30	60
English	ENGL-201	20	20	20	60
Glassblowing (Laboratory)	CHT-212	30	—	—	30
Total					930

CHT-221 INSTRUMENTAL CHEMICAL ANALYSIS 300 Hours

This course is similar in content to CHT-201 (See outline p. 103), but is more intensive.

CHT-228 ORGANIC CHEMISTRY 200 Hours

This course is similar in content to CHT-208 (See outline p. 103), but is more intensive.

CHT-223 PHYSICAL CHEMISTRY 110 Hours

This course is similar in content to CHT-213 (See outline p. 103), but is more intensive.

PHYS-208 PHYSICS

EN-212 ELECTRONICS

ENGL-201 ENGLISH

See unit outlines for
second year Chemical
Technology (p. 103)

MATH-208 MATHEMATICS 60 Hours

Treatment of experimental data; Interpolation and extrapolation; Use of different types of graph paper; Determination of empirical equations from experimental data.

Introduction to statistics; Organization of data, tabular and graphical representation of frequency distributions; Summation notation; Data analysis with measures of central tendency and dispersion; Probability, permutations and combinations.

The Binomial Distribution and the Normal Distribution; Random Sampling and Testing hypothesis, significance levels and confidence limits; Students t-distribution; Non parametric statistics; Regression and correlation; Chi-square distribution.

CHT-212 GLASSBLOWING (LABORATORY) 30 Hours

Glass blowing techniques; repair of chemical glassware and apparatus.

BIOCHEMICAL TECHNOLOGY

This optional second year course following completion of 1st year Chemical Technology has been arranged due to the ever-increasing number of requests for technologists from a wide range of organizations with biochemical orientation. The broad basic training plus specialized studies in biochemistry and bacteriology directs graduates toward opportunities in agricultural industries, food and beverage industries, forestry departments, departments of agriculture, biochemistry departments of universities, governments, hospitals, biochemistry laboratories atomic energy commissions, and other government agencies.

FIRST YEAR

Identical to first year of Chemical Technology (see P. 101 and 102)

SECOND YEAR

(Interim for 1967-68 only)

Subject	Unit	Term			Total Hours
		1st	2nd	3rd	
Instrumental					
Chemical Analysis	CHT-231	110	110	110	330
Organic Chemistry	CHT-238	90	30	—	120
Physical Chemistry	CHT-233	20	30	40	90
Biochemistry	CHT-230	—	90	60	150
Bacteriology	CHT-232	—	—	50	50
Physics	PHYS-208	60	20	20	100
English	ENGL-201	20	20	20	60
Total					900

CHT-231 INSTRUMENTAL CHEMICAL ANALYSIS 330 Hours

This course is similar in content to CHT-201 but the methods will be related to biochemical applications.

CHT-238 ORGANIC CHEMISTRY 120 Hours

The preparation and purification of industrial organic compounds, special procedures, commercial preparations including certain synthetic drugs and pharmaceuticals, insecticides, and synthetic polymers.

Theoretical studies in organic chemistry theory, extending the first year program, and relating to the laboratory work.

CHT-233 PHYSICAL CHEMISTRY 90 Hours

Molecular structure; the gas laws; studies in thermodynamics; thermochemistry; general characteristics of liquids; surface tension; viscosity; composition of solutions; immiscible liquids; Raoult's Law; colloids — kinetic behaviour; osmotic pressure; sedimentation equilibrium; electro-phoresis; absorption; emulsions; gels; industrial colloids; chemical equilibria; phase diagrams; chemical kinetics; reaction rates; catalysis; industrial applications; electrical conductance; transference numbers; ionic conductances; ionic equilibria buffer solutions; Debye Huckel theory; photochemistry; nuclear structure.

CHT-230 BIOCHEMISTRY 150 Hours

Application of physico-chemical principles to biochemical systems; carbohydrates, lipids and proteins; classification, structure, reactions and metabolism. Nucleic acids and nucleoproteins; DNA and RNA Enzymes; nature, mechanisms and function; application in synthesis; hormones and vitamins; chemical nature, tests and physiological roles. Chemical and physical aspects of energy metabolism.

The composition of foods and analysis; nature and use of food additives; fermentation.

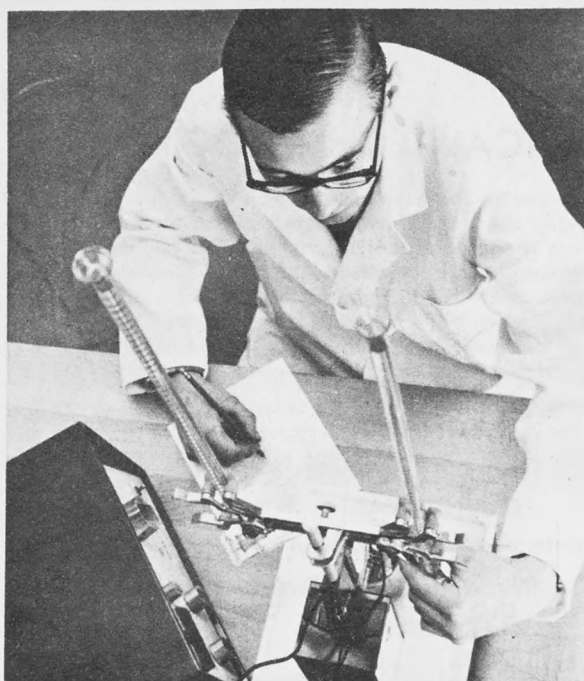
CHT-232 BACTERIOLOGY 50 Hours

A study of bacteria, moulds, yeasts and algae; morphological characteristics, disinfection, sterilization, reaction to physical agents, enzymes, microorganisms in air, water, milk, food preservation, food inspection and food poisoning; relationship of bacteria to disease, animal borne diseases, insect borne diseases, immunity and immunity reactions; use and care of the microscope.

PHYS-208 PHYSICS, 100 Hours

ENGL-201 ENGLISH, 60 Hours

See unit outlines for Second Year Chemical Technology (P. 103).



CHEMICAL OPERATIONS TECHNOLOGY

In an effort to meet the needs of the chemical industry for trained personnel in the areas of production and process development the Chemistry Department has developed the new Chemical Operations Technology program. The first year is common with the Chemical Technology program. In the second year there is a strong emphasis toward engineering type subjects.

Upon graduation the Chemical Operations Technologist may expect to work with chemical engineers in the fields of process operation and control, process development and pilot plant investigations. There is great variety among the opportunities available in industry, in university departments of chemical engineering and with government research agencies. Many positions may lead to supervisory responsibilities.

FIRST YEAR

Identical to first year Chemical Technology (see p. 101 and 102)

SECOND YEAR

(Available starting 1968-69)

Subject	Unit	Term			Total Hours
		1st	2nd	3rd	
Analytical Chemistry	CHT-241	30	50	50	130
Industrial Chemistry	CHT-240	30	30	30	90
Physical Chemistry	CHT-243	50	50	30	130
Process Instrumentation	PET-240	30	30	30	90
Unit Operations	CHT-242	50	—	90	140
Technical Project and Report	CHT-219	—	20	10	30
Mathematics (including FORTRAN Programming CT-200)	MATH-278	40	30	30	100
Electronics	EN-212	40	30	—	70
Drafting	DFTG-207	30	30	—	60
Metallurgy and Materials	MLY-240	—	30	30	60
Total					900

OTHER SECOND YEAR PROGRAMS TO BECOME EFFECTIVE IN 1968 - 69

(A) CHEMICAL TECHNOLOGY

Subject	Unit	Term			Total Hours
		1st	2nd	3rd	
Instrumental					
Chemical Analysis	CHT-201	110	110	110	330
Organic Chemistry	CHT-208	60	50	60	170
Physical Chemistry	CHT-213	40	40	40	120
Industrial Testing	CHT-204	30	20	20	70
Chemistry Option	CHT-218	—	30	30	60
Technical Project and Report	CHT-219	—	20	10	30
Physics	PHYS-278	60	—	—	60
Electronics	EN-212	—	30	30	60
Total					900

(B) CHEMICAL RESEARCH TECHNOLOGY (Optional Second Year)

Subject	Unit	Term			Total Hours
		1st	2nd	3rd	
Instrumental					
Chemical Analysis	CHT-221	100	100	100	300
Organic Chemistry	CHT-228	50	50	80	180
Physical Chemistry	CHT-223	—	60	60	120
†Glassblowing	CHT-212	30	—	—	30
Chemistry Option	CHT-218	40	—	20	60
Technical Project and Report	CHT-219	—	20	10	30
Physics	PHYS-278	60	—	—	60
Mathematics	MATH-208	50	40	—	90
Electronics	EN-212	—	30	30	60
Total					930

(C) BIOCHEMICAL TECHNOLOGY (Optional Second Year)

Subject	Unit	Term			Total Hours
		1st	2nd	3rd	
Instrumental					
Chemical Analysis	CHT-231	110	110	110	330
Organic Chemistry	CHT-238	60	60	—	120
Physical Chemistry	CHT-233	40	—	50	90
Biochemistry	CHT-230	—	80	80	160
Bacteriology	CHT-232	—	—	50	50
Chemistry Option	CHT-218	30	30	—	60
Technical Project and Report	CHT-219	—	20	10	30
Physics	PHYS-278	60	—	—	60
Total					900

†Students in Chemical Research Technology will register one week early to take the concentrated Glassblowing course.

Communication Arts Department

M. W. CUNNINGHAM, DEPARTMENT HEAD

GRAPHIC ARTS ADMINISTRATION

JOURNALISM ADMINISTRATION

LIBRARY ARTS

TELEVISION, STAGE AND RADIO ARTS

GRAPHIC ARTS ADMINISTRATION

The graphic arts industry is a multi-million dollar business built on a triangle of sales, production, and management, with each area requiring highly skilled and competently trained personnel.

This course, which has been designed in co-operation with an Advisory Committee of local businessmen, is aimed primarily at filling the need for personnel in the sales and management areas. In achieving this aim, the course will provide students with a general background knowledge of production techniques in printing and photography and intensive and comprehensive training in business and administrative theory and practice, including sales and human relations as well, as in the communication skills required of supervisory personnel.

Graduates of the course will receive the Institute's Diploma of Applied Arts, which has Canada-wide recognition.

Graduates may look forward to employment as sales representatives or as junior administrators and assistants in such departments as planning, scheduling purchasing, estimating and quality control.

Potential employers include commercial printers, lithographers, silk screen companies, printing equipment distributors, advertising departments and agencies, public relations departments and agencies paper and ink wholesalers, private industrial printing plants and other firms engaged wholly or partly in graphic arts.

Much of the graduate's work will involve dealing with the public as well as working cooperatively with fellow employees, especially in working as a liaison between the printers and craftsmen on the one hand and the managers and superintendents on the other. Thus, his advancement within a firm will depend on his initiative and ability as well as his willingness to keep pace with the rapid advances being made in the industry.

Admission prerequisites and enrolment regulations are given on pages 18 and 22. A statement of high school results, or other documentary proof, must accompany each application.



GRAPHIC ARTS ADMINISTRATION

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

FIRST YEAR

Subject	Unit	Hours
Printing Processes I	GA-100	180
Chemistry	CHEM-109	90
Physics	PHYS-121	45
Electronics	EN-140	45
Mathematics	MATH-121	90
Accounting	GA-102	150
Economics	GA-103	90
English I	ENGL-102	90
Sales and Human Relations	GA-101	120
Total		900

GA-100	PRINTING PROCESSES I AND II	180 Hours
		240 Hours

The details of this subject were prepared entirely by the men from the graphic Arts industry. Topics to be studied are: History of printing; printing processes: letterpress, lithography, rotogravure, silkscreen, flexographic, electrostatic, thermography, embossing, rotary and web, pen ruling, magnetic ink and coating; typography: hot and cold setting, copy fitting, mark-up of copy, proof reading's marks, cold composition; camera and platemaking: theory of photography, photo engraving, steel dies, dycril, zinc cuts; paper: types of papers and uses, imposition, cutout; inks: history and theory, letterpress and litho, mixing; plant tours: to give students familiarity with a variety of modern printing equipment; demonstrations and guest lectures; in-plant training: each student will spend one week each year working in a printing plant office; bindery processes: art, design and layout make-up: considerable emphasis will be given to this very important part of printing processes and will be given at least 60 hours of instructional time in each year of the course.

CHEM-109

CHEMISTRY

Lab. 30 Hours
Theory 60 Hours

An introduction to modern chemistry; topics to be studied include: the states of matter: gases, the Kinetic-molecular theory, liquids, solids; the atomic theory, chemical reactions; the structure of matter; electronic configuration of atoms, the periodic law, chemical binding; solutions; properties of acids and bases, pH, electrochemistry, colloids; systematic study of metals and non-metals.

PHYS-121

PHYSICS

45 Hours

The physics course will be offered in the first half of the year. It will cover topics in light, electricity and electron physics.

EN-140

ELECTRONICS

45 Hours

A continuation of the electricity and electronics physics; emphasis is placed on basic electronic theory with application made to the Graphic Arts industry.

MATH-121

MATHEMATICS

90 Hours

Algebra: Formulae; fundamental operations; simple equations; special products, factoring; fractions; fractional equations; functions; graphs; systems of linear equations; exponents and radicals; quadratic equations; systems of quadratic equations; quadratics in two variables; logarithms; progressions; binomial theorem; Statistics: mean; median; mode; frequency distribution; class interval; frequency curve; cumulative frequency; normal frequency curve; measures of dispersion; linear correlation.

GA-102

ACCOUNTING

150 Hours

An introduction to standard and Printing Industries of America accounting techniques; the following topics are covered: the balance sheet, journals and ledgers; working papers; payrolls; ownership companies, partners, proprietors; special books of original entry; accounting forms and bookkeeping forms. This course will also be applied to the selling of accounting forms.

GA-103

ECONOMICS

90 Hours

An introduction to modern principles of economics and their application to the Graphic Arts Industry. It will cover such topics as: price; supply and demand; economic role of government; taxation; national income analysis; cost and supply, and theory of production.

ENGL-102

ENGLISH I

90 Hours

Three units are studied. The first unit provides the student with the important executive skill of effective communication by the study and preparation of short reports, memorandum and letters. The second unit is an analysis of straight thinking. The third unit is a study of the communication problems of modern advertising and the mass media.

GA-101

SALES AND HUMAN RELATIONS

120 Hours

This course provides the student with a foundation knowledge of psychology and sociology. This knowledge will then be applied to personal selling and advertising. The application to selling will be made in the first year. The application to advertising will be made in the second year "Sales and Advertising" course.

SECOND YEAR

Subject	Unit	Hours
Printing Processes II	GA-200	240
Printing Materials	GA-206	60
Electronic Data Processing	CT-221	30
Cost Accounting and Estimating	GA-202	150
Sales and Advertising	GA-203	90
Production Management	GA-204	90
English II	ENGL-202	90
Business Law	GA-205	90
Human Relations in Administration	GA-201	60
Total		900

GA-200

PRINTING PROCESSES I AND II

180 Hours

240 Hours

The details of this subject were prepared entirely by the men from the Graphic Arts industry. Topics to be studied are: History of printing; Printing processes: letterpress, lithography, rotogravure, silkscreen, flexographic, electrostatic, thermography, embossing, rotary and webb, pen ruling, magnetic ink and coating; typography: hot and cold setting, copy fitting, mark-up of copy, proof reading's marks, cold composition; camera and platemaking: theory of photography, photo engraving, steel dies, dycril, zinc cuts; paper: types of papers and uses, imposition, cutout; inks: history and theory, letterpress and litho, mixing; plant tours: to give students familiarity with a variety



of modern printing equipment; demonstrations and guest lectures; in-plant training: each student will spend one week each year working in a printing plant office; application of electronic computers to the printing industry; bindery processes; art, design and layout make-up: considerable emphasis is given to this very important part of printing processes.

GA-206 PRINTING MATERIALS 60 Hours

The student is introduced to the physical and chemical aspects of, and process associated with, ink-setting, paper coating, paper manufacture, photographic developing and printing. The properties, uses and limitations of different types of paper, additives, inks, metals and other materials associated with Graphic Arts industry will be discussed. The phenomena of color vision and methods of colour reproduction are included.

CT-221 ELECTRONIC DATA PROCESSING 30 Hours

This course will introduce the student to the electronic computer. The following topics will be discussed: unit record equipment, data processing mathematics and machine language, programming systems, higher level languages, computer programming with practical applications in E.D.P. laboratory.

GA-202 COST ACCOUNTING AND ESTIMATING 150 Hours

Printing Industries of America methods comprise the foundation for this course. The cost accounting course is built on the foundation of accounting given in the first year. It includes a discussion of job costing: process costing; standard costing; direct labor, overhead allocation; goods in process, material purchasing and transportation. The estimating course includes a study of various catalogues and pricing systems, costs of various processes, labor costs, analysis and use of various estimating tables, and the solution of problems.

GA-203 SALES AND ADVERTISING 90 Hours

The student is given a thorough knowledge of advertising principles and practice. This knowledge will be applied to the selling of printed materials.

GA-204 PRODUCTION MANAGEMENT 90 Hours

This course emphasizes control, plant layout, performance standards, production control, quality control, maintenance, basic machine processes, work routing, industrial purchasing.

ENGL-202 ENGLISH II 90 Hours

This course is designed to further develop the student's ability to think and read critically and to express himself with force and clarity. The course of study includes a comprehensive introduction to imaginative literature and formal training in speech.

GA-205 BUSINESS LAW 90 Hours

Topics include: law of contracts, liens and mortgages, bills and promissory notes, negotiable instruments, land titles, single ownership and partnership, the Companies Act.

GA-201 HUMAN RELATIONS IN ADMINISTRATION 60 Hours

This course is an introduction to the human problems of management. Topics would include supervision of personnel, supervisory skills and the administrative process (planning, organizing, staffing, directing and controlling).

JOURNALISM ADMINISTRATION

The field of journalism requires large numbers of people with a variety of skills.

Although we usually think of newspapers, daily or weekly, when we use the term, this word journalism in its broadest meaning also includes general magazines, professional journals, trade papers and house organs, and radio and television.

Moreover, we frequently think only of reporters, photographers and editors when we use the word journalism. However, besides these people, who are engaged in the gathering and structuring of facts and opinions, the field of journalism requires persons with an interest and training in the business aspects of newspaper and magazine production. As well as advertising salesmen and circulation managers, newspapers and magazines require accountants, public relations personnel and office managers, each with a staff of trained persons to assist him.

The purpose, then, of this Journalism Administration course is to provide as broad a background as possible for young people interested in various phases of journalism. The course has been developed with the advice and assistance of western Canadian editors, publishers and businessmen connected with daily and weekly newspapers and public relations firms.

Admission prerequisites and enrolment regulations are given on pages 18 and 22. A statement of high school results, or other documentary proof, must accompany each application.



JOURNALISM ADMINISTRATION

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

FIRST YEAR

Subject	Unit	Hours
Mass Media and Mass Communications	CA-100	90
Typing	SA-180	120
Photojournalism	JA-103	90
Advertising	JA-102	120
News Writing and Reporting	JA-101	150
Newspaper Laboratory	JA-100	240
Seminar	JA-104	90
Total		<hr/> 900

CA-100	MASS MEDIA AND MASS COMMUNICATIONS	90 Hours
Historical survey, growth of newspapers from bulletins and pamphleteers; economic motivation viz. circulation revenue versus advertising revenue against costs and anomalies arising therefrom; appreciation of newspapers, newsletters, magazines, books, printing, photography, films, radio, television and modern communications aids; freedom of press; government control of radio and television outlets and reasons why; psychological principles; motivation; techniques of presentation; news, propaganda, opinion, public relations, news releases; propaganda as an ideological weapon; recent technological advances in newspapers — i.e. letterpress, letterset, offset, wire services, teletypes, cold type machines, computers, automatic linotypes, facsimile transmission, color techniques; new growth of supplements with advantages and disadvantages; departments of a daily newspaper and their functions; influence of speedier air travel on newspapers; unions and monopolies as they affect newspapers; ethics, duties.		
SA-180	TYPING	120 Hours
Speed to 40 words a minute minimum; touch typing; experience on old machines, cold type machines with typewriter keyboard; punch tape machines; varitypers. Preparation of copy for linotype and manuscripts for book publishers; typing of heads; dummy lay-outs.		
JA-103	PHOTOJOURNALISM	90 Hours
Action shots; still shots; posed shots; landscape shots; spot news versus features; backgrounds; types of camera; cropping, enlarging, reducing; cutlines; photojournalism as an aid to advertising; color shots; use of scan-a-gravers; elementary color work including filter separations; shooting pages for offset; half-tones, various types of screens; lay-out aids such as captions, hoods, buckets, etc.; picture lay-out on a page; choice of subjects; difficulties encountered by cameraman in obtaining pictures from authorities, from bereaved relatives, etc.		
JA-102	ADVERTISING	120 Hours
Sizes of type; use of illustrations; mat services versus original art; lay-out; economic motivation; small ad ideas; big ad ideas; institutional ads; national ads; co-operative ads; classified selling and styles; space selling; amount of turn-over to be devoted to advertising of all sorts; comparative advantages of radio, newspaper, television, direct mail, bill boards, commercial printing, signs; dependence of newspaper on advertising revenue; advertising versus news content; public relations; dependence on circulation; rough lay-outs; local and national advertising; lengthy campaigns; major sales; use of color; marking up copy for linotype; borders; history of advertising; appreciation of operation of agencies; elementary understanding of methods of billing, collection, etc.; special issues; supplements.		
JA-101	NEWS WRITING AND REPORTING	150 Hours
Pyramid theory for news stories; leads; features; time copy; rewriting; journalese style; rules of priority; editorials; background features; interpretive journalism; magazine writing versus newspaper writing; copy writing for advertising; laws of libel; work of desk; editing; collecting and collating wire stories; precise writing; sources of news; speedwriting or shorthand; styles; writing heads, kickers, cutlines etc.; wire service and telegraph; security; choice of news.		
JA-100	NEWSPAPER LABORATORY	240 Hours
California casting and elementary handpicking of foundry type; elementary knowledge of linotype; case and galleys; locking up a form; elementary composition of a page in lead; inserting a correction; proof reading; dummy lay-outs; functions of a make-up editor; composing room measures and phraseology; elementary paste-up; feeding a press, adjusting ink fountains, elementary make-ready.		
JA-104	SEMINAR	90 Hours
Field trips; guest lectures; special projects.		
SECOND YEAR		
Subject	Unit	Hours
Newspaper Laboratory	JA-200	240
Modern Literature	ENGL-220	90
Photojournalism	JA-203	90
Modern Economics and Political Science	CA-210	90
News Writing and Editing	JA-201	120
Advertising and Circulation	JA-202	120
Public Relations and Salesmanship	JA-204	60
Seminar	CA-100	90
Total		900



- JA-200** **NEWSPAPER LABORATORY** **240 Hours**
 Preparation for offset; paste-up; pulling of proofs; cold type machines; Ludlow (elementary); vertical cameras, opaquing, burning plates. Complete production of campus newspaper in every phase. Repetition of practice in first year, but include lead composition of simple advertisements. Classified make-up (elementary; well principle of page make-up).
- ENGL-220** **MODERN LITERATURE** **90 Hours**
 Change in writing styles through ages; comparison of power of words — impact of those of Saxon derivation versus Latin, Greek, French, etc. — use of dictionary and thesaurus. Essays, short stories, histories, novelettes, etc. Formula writing. Stress strength of simplicity. History of English Literature, tracing development. Comparison of styles of leading contemporary journalists i.e. Alan Moorehead, John Gunter, Ken McTaggart, Charles Lynch, Joseph Alsop, Quentin Reynolds, etc.
- JA-203** **PHOTOJOURNALISM** **90 Hours**
 Care and use of camera equipment, developing and printing photographs, cropping, new values of pictures, cutlines, photostories, color.
- CA-210** **MODERN ECONOMICS AND POLITICAL SCIENCE** **90 Hours**
 Background of economic theory; practical business economics as applied to news media; elementary bookkeeping, maintenance of records, tools for small business management, collection procedures, billing procedures; Canadian government structures at all levels; foreign government structures and political theories; emphasis on role of municipal government; education theories and government; contemporary history; contemporary social studies.
- JA-201** **NEWS WRITING AND EDITING** **120 Hours**
 Practical assignments on material in first year; covering of local beats such as courts, fire halls, city council, etc. Practice in writing editorials. Feature writing.
- JA-202** **ADVERTISING AND CIRCULATION** **120 Hours**
 Emphasis on selling, promotions etc.; practical selling for campus newspaper; application of subjects learned in first year. Circulation — types, street sales, carrier sales, subscription sales; circulation promotions; door-to-door selling; methods of maintaining records; types of addressing machine — winged mailer, Elliott, Addressograph; handling complaints.
- JA-204** **PUBLIC RELATIONS AND SALESMANSHIP** **60 Hours**
 Public relations — preparation of prospectus, news release, annual reports, promotions — obtaining goodwill of media — projection of an image — organizing meetings — describing a business, a project — artist's conceptions — countering hostile stories damaging to the company, etc. — personnel management.
- CA-100** **SEMINAR** **90 Hours**
 Field trips; guest lectures; special 90 hours projects.

LIBRARY ARTS

For the past twenty-five years the so-called "information explosion" has placed an increasing burden of responsibility and work on professional librarians.

To help free professional librarians from some of their work load this course in library arts has been planned with the advice of a group of professional librarians from public, business and university libraries. The aim of the course is to give young people a broad background in the business and technical skills required for the efficient operation of public and private libraries.

Prospective students should note that this course will not qualify them as professional librarians. The requirements for professional status are a university degree followed by at least one year in a recognized school of library science.

This course will, however, give students a knowledge of the daily procedures of a library as well as providing them with the basic philosophy of librarianship.

Prospective students should also note that a ten week in-service period of work is required in an accredited library before a diploma can be issued.

Admission prerequisites and enrolment regulations are given on pages 18 and 22. A statement of high school results, or other documentary proof, must accompany each application.



LIBRARY ARTS

FIRST YEAR

Subject	Unit	Hours
Business English	ENGL-125	60
Modern Literature	ENGL-130	90
History of Books & Libraries	LA-102	90
Library Technical Services	LA-101	150
Library Business Procedures	LA-104	150
Library & Business Machines Lab	LA-105	30
(first quarter only)		
Audio-Visual Aids	LA-103	60
(second and third quarters)		
Accounting	BA-112	60
Human Relations	CA-110	90
Typing	SA-100	
or Sociology	CA-115	120
Total		900

ENGL-125

BUSINESS ENGLISH

60 Hours

Basic principles of good writing: clarity, simplicity, accuracy, conciseness. Mechanics and principles of business letters. Forms of the business letter. Parts of the business letter. Miscellaneous factors in business letter make-up. Principles of business letter writing. Kinds of business letters: letter of inquiry; replies to inquiries; orders and acknowledgements; letters of application; goodwill letters.

Business reports. Principles of effective report writing. Organizing and analyzing data. Evaluating the interpreting data. Outlines. Short form reports. Formal reports. Recommendation and progress reports. Annual reports.

ENGL-130	MODERN LITERATURE	90 Hours
Basic literary forms: the poem, the essay, the short story, the novel, the play. The types, classes and technical and stylistic details of each form will be studied with particular reference to specified authors.		
LA-102	HISTORY OF BOOKS AND LIBRARIES	90 Hours
History of the printed media: books, magazines, newspapers, journals, modern methods of printing and publishing; private, public and special libraries, their origin and evolution.		
LA-101	LIBRARY TECHNICAL SERVICES	5 Hours
The acquisition and cataloguing of books: Acquisition processes; co-ordination of the purchase and care of books to cataloguing; organization of library materials; filing procedures. Cataloguing: the library catalogue; classification; shelf arrangement; shelf records; special materials; commercial cataloguing services; centralized systems.		
LA-104	LIBRARY BUSINESS PROCEDURES	150 Hours
Relation of office procedures to the library; standardized library organization; administration and management; work control; library clerical routines; flow of work; correspondence; library records and filing; library personnel and job specifications.		
LA-105	LIBRARY AND BUSINESS MACHINES LABORATORY (First Quarter)	90 Hours
Operation of standard library equipment including calculators, reproduction equipment; photocopiers, card reproduction, spirit stencils, Diago, infra red, and quality produced materials; bookkeeping machines; dictaphones; use of microfilm readers.		
LA-103	AUDIO VISUAL AIDS (Second and Third Quarter)	90 Hours
Kinds, costs and uses of visual aids; organization for using and caring for films, film-strips, slides, records, tapes, exhibits, displays in libraries; experience in operation and maintenance of various types of equipment; sources of information about audio visual materials and equipment.		
BA-112	ACCOUNTING	60 Hours
Basic principles of accounting: criteria for excellence in accounting; financial records; budgets; controls; inventories, accounting for purchase and assignment of merchandise.		
CA-110	HUMAN RELATIONS	90 Hours
Dealing with the public: face-to-face meetings, telephone techniques, handling suggestions and complaints; the nature of man in various settings; motivation; morale; social institutions; personality; vocational tasks; co-operating with co-workers; dealing with subordinates; dealing with supervisors.		
SA-100	TYPING	120 Hours
Students exempted from this subject must take SOCIOLOGY CA-115. Manual skills are taught with emphasis on speed and accuracy to a minimum of 45 words per minute.		
CA-115	SOCIOLOGY	120 Hours
Foundations of society; social organization; the family, education, economic institutions, government, religion, communication; behaviour systems; social stratification; social change; culture and human communities; social interaction; trends and problems in world population.		

SECOND YEAR

Subject	Unit	Hours
Library Public Services	LA-201	120
Library Administration	LA-202	60
Survey of World Literature	ENGL-230	100
Children's Literature	LA-203	80
Modern World History	CA-205	60
Speech	ENGL-235	60
Shorthand	SA-241	
or Introduction to Data Processing	CT-224	120
In Service Training	LA-200	300
Total		900

NOTE: The following subjects will be taken during First and Second Quarters only. The entire Third Quarter will be spent in an in-service training period in a recognized library.



- LA-201 LIBRARY PUBLIC SERVICES 6 Hours**
Circulation and reference services; Circulation systems; circulation procedures. Basic references; Almanacs; encyclopedia; atlases; dictionaries; indexes; bibliographies. Controlling the literature of the humanities, sciences and social science.
- LA-202 LIBRARY ADMINISTRATION 60 Hours**
Library legislation; functions of library boards; personnel policies; types of library services; the administration of university, school, regional, special and children's libraries; library associations.
- ENGL-230 SURVEY OF WORLD LITERATURE 100 Hours**
Major writers and movements in world literature; selected readings from specific periods to illustrate the evolution of various genres to modern times.
- LA-203 CHILDREN'S LITERATURE 80 Hours**
The philosophy, organization, and administration of children's literature departments; reading and discussion of children's books; a survey of the field of children's literature; storytelling and library lessons for children; reference books, periodicals and bibliographies.
- CA-205 MODERN WORLD HISTORY 60 Hours**
Revolutionary Europe — 1789 to the 1840's; Nationalist Europe — 1830 to 1870; Europe and the World — 1870's to the 1910's; the World of the Twentieth Century — 1914 to the 1960's.
- ENGL-235 SPEECH 60 Hours**
Basic principles of speech; the nature and function of the speech process; the speech purpose and the audience; using the voice; organizing a speech; introductions and conclusions; kinds of speeches; informative, persuasive, entertaining; methods of delivery; speeches for special occasions; discussions and seminars; meetings and parliamentary procedure.
- SA-241 SHORTHAND 120 Hours**
Students exempted from this subject must take INTRODUCTION TO DATA PROCESSING CT-224.
Symbolic language is taught with emphasis on speed and accuracy to a minimum of 80 words per minute.
- CT-224 DATA AND INFORMATION PROCESSING 120 Hours**
Unit record methods; card punching, sorting, collating, reproducing; the basics of computers including internal coding, character and word machines; Input and output devices; computer languages; list processing languages; information retrieval; real time systems.
- LA-200 IN SERVICE TRAINING (Entire third quarter) 300 Hours**

TELEVISION, STAGE AND RADIO ARTS

As Canada develops into an expanding industrial society, the visual and audio media of communication are also expanding to meet the increasing needs of a sophisticated public for information and entertainment.

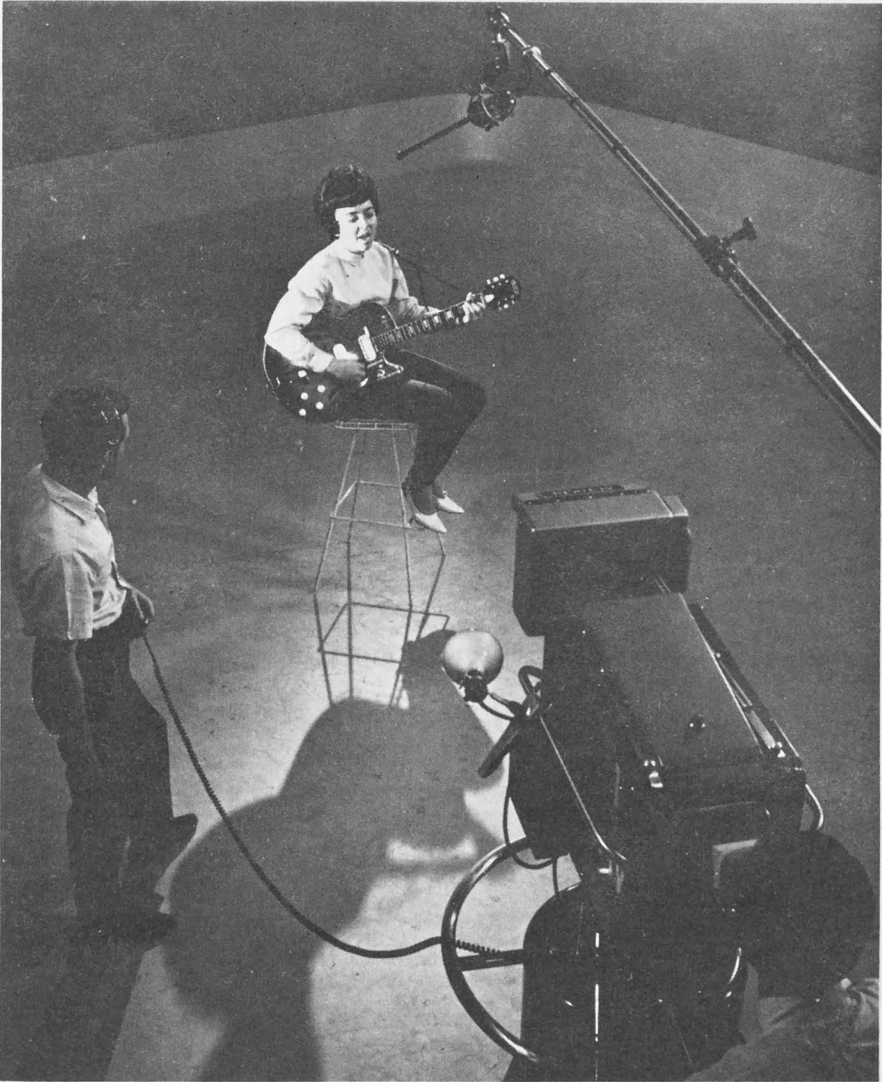
Television, Stage and Radio Arts, through a blend of industrial theory and realistic practical training, prepares graduates for immediate employment in these expanding industries. Prospective employers include radio and television stations, institutions and schools using educational television, public auditoriums and theatres, industrial advertising and display departments and public relations firms.

The course of studies in first year will include necessary academic subjects to provide students with an understanding of current conditions and problems in society, basic writing for radio and television, speech, radio and television programming and principles of design.

In the second year, students may prepare for a career in writing, performing and management by studying writing, editing, marketing, public relations, station management and broadcast law. Other students more visually oriented may enter stage and television production by studying design and execution of sound, lighting, sets, costumes, properties and make-up.

During both years, students will spend much of their time in production laboratories, taken in the Institute's two professionally equipped studios. Students will receive practical professional experience by working on productions for Calgary and Region Educational Television, all of whose productions will be produced from the Institute's studios.

NOTE: Further information was not available at the time of publication but may be obtained by contacting the Registrar.



Diesel Department

S. J. HANNON, DEPARTMENT HEAD

AGRICULTURAL MECHANICS

DIESEL MECHANICS

(Heavy Duty Mechanics)

AGRICULTURAL MECHANICS

Apart from the investment in land, the initial investment in a tractor and its allied equipment constitutes the largest financial item in a farm set-up. Unlike the land, which frequently increases in value from year to year, there is a constant depreciation of farm equipment which is reflected in annual upkeep costs and the eventual replacement of each machine. Successful farm management involves a comprehensive knowledge of all machines used in Alberta agriculture, their operational costs, costs of ownership and maintenance.

A knowledge of oxy-acetylene and electric welding may provide the means by which vital jobs, such as seeding and harvesting are completed on time.

The correct location, arrangement and construction of farm buildings may determine the eventual success or failure of a farming enterprise.

This course is designed to equip young men with the necessary skills and knowledge to enable them to buy wisely and to maintain their own tractors, farm machinery and buildings.

Each year of the course lasts five months and is divided into two terms. Some of the course subjects are complete at the end of the first term each year and the examinations given at that time are final examinations.

Admission prerequisites and enrolment regulations are given on pages 18 and 22. A statement of high school results, or other documentary proof, must accompany each application.



AGRICULTURAL MECHANICS

Two-Year Course

October 1967 to March 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

FIRST YEAR

Subject	Unit	Hours
Farm Power Theory	AGM-101	169
Tractor Shop	AGM-100	256
Farm Machinery	AGM-102	128
Business Knowledge	ENGL-103	51
Welding	W-104	90
Total		694

AGM-100

TRACTOR SHOP

256 Hours

Demonstration and practice in the following: proper use and care of precision measuring devices, hand and power tools, soldering and elementary metal work; engine overhaul consisting of honing, fitting cylinder sleeves, fitting of pistons, rings, wristpins and bearings; valve timing, reseating, grinding and setting; overhaul and timing of battery coil and magneto ignition systems; servicing of batteries and electrical circuits; maintenance and repair of generators, starters and voltage regulators; servicing and repair of fuel, cooling and lubricating systems; tune up; overhaul and adjustment of clutches, transmissions, drive lines, rear axles, brakes and steering; dynamometer testing to determine horsepower and fuel economy.

169 Hours

Theory of electricity; electric current; resistance, voltage and current; Ohm's Law; direct current circuits, series, parallel; electric power; theory of the lead acid battery; multiple battery hook up; magnetism; electromagnetic induction; ignition coils and systems; generator fundamentals; generator output controls, regulation; cranking motor fundamentals.

128 Hours

Classroom and shop discussion on the various machines used in power farming in Alberta, including tillage, seeding, harvesting and haying equipment, as well as sprayers, grain driers and specialized equipment. Practice in the maintenance, adjustment and overhaul of one-ways, discers, moldboard plows, cultivators, press drills, fertilizer attachments, sprayers, balers, swathers, combines, forage harvesters, mowers, rakes, feed processing machinery and grain cleaning equipment. Cost of operation and purchase of farm machinery will be considered.

51 Hours

Farm records; methods and practice in keeping farm records; income tax, capital cost allowance, year-end summaries; analysis of these records to determine the success of various enterprises. Standard forms are used throughout.

Farm reports; written and oral; methods of preparing and organizing papers; research methods; preparation of a formal technical report; presentation of short speeches before an audience.

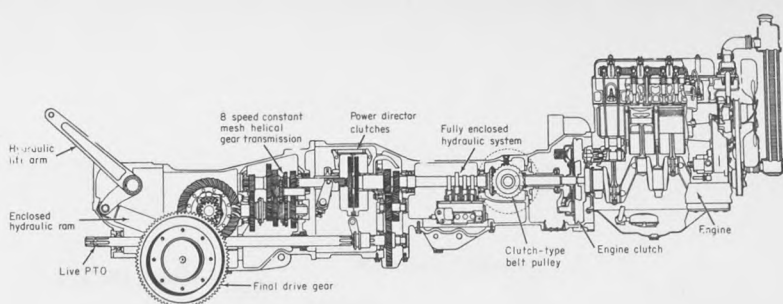
90 Hours

Theory and practice of oxy-acetylene welding and hand cutting, care and setting up of equipment, safety precautions, studies in expansion and contraction, joint types and preparation, weld faults; braze welding, fusion welding, low temperature brazing and hard surfacing.

Shop work will include the fusion welding of mild steel in all positions, cast fusion welding, and brazing of cast iron and steels; flame cutting and shearing of steels.

Subject	Unit	Hours
Farm Power Theory	AGM-201	124
Tractor Shop	AGM-200	176
Farm Electrification & Farm Water Systems	AGM-202	51
Hydraulics	AGM-203	34
Building Construction and Concrete Work	ST-205	167
Electric Welding	W-201	90

Total	642
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AGM-200

TRACTOR SHOP

176 Hours

Tractor shop; advanced tractor shop involving complete overhaul; reboring if necessary; reconditioning of valve seats and guides; repairing and testing of magnetos, generators and starters; setting and adjusting voltage and current regulators; rewiring of the generator and lighting circuits; replacement and adjustment of brake linings; rebuilding and testing of diesel pumps and injectors; dynamometer testing and break-in procedure on each unit; performance reports on overhaul units.

AGM-201

FARM POWER THEORY

124 Hours

A study of two- and four-stroke cycle diesel engines; combustion in spark ignition and compression ignition engines; causes of knock in a diesel engine; combustion chamber design; advantages of various combustion chamber designs; effects of supercharging and turbo-charging on power output and fuel economy; types of cooling systems; starting systems and aids; trouble-shooting and maintenance; diesel fuel injection systems; fuel delivery tests; pump phasing, timing, calibrating and timing to the engine; the operating principles and construction details of multi-plunger, single plunger distributor type pumps and unit injector. A study will be made of governing principles, speed regulation requirements, mechanical, hydraulic and pneumatic type governors; a study on powershift transmissions, two-speed clutches and torque converters.

Capital and operating costs of diesel, propane, and gasoline tractors; cost analysis of farm machinery; methods of determining power output; power selection using Nebraska test data; balancing tractor size to implement size; tandem and four-wheel drive tractor designs; use of performance curves for power unit and tractor selection.

Theory and operation of the a-c generators and regulators; theory and operation of transistorized ignition system.

AGM-202

FARM ELECTRIFICATION AND FARM WATER SYSTEMS

51 Hours

Review of d-c fundamentals; circuits; electrical power and energy.

Reasons for standards and code regulations; conductors and circuits, protective and control devices; fundamentals of wiring, three wiring system, polarizing and grounding; wiring farm buildings, alterations and repairs; safety practices; care of appliances; electric motors: characteristics, installation and maintenance.

A study of water sources; water purification; selection and types of pumps; location of pumps; power requirements for pumping; selection of power; piping and plumbing requirements; sewage disposal including septic tanks and lagoons; principles and methods of irrigation.

AGM-203

HYDRAULICS

34 Hours

Basic principles of hydraulics; types of hydraulic pumps; control valves; types of hydraulic cylinders, single and double acting; types and sizes of hose and couplers; pressure valves, regulating and relief; hydraulic fittings and types of oil used; overhaul procedure on agricultural hydraulic systems; tests on flow rates, pressure and relief settings; shop testing and overhaul of hydraulic pumps, control valves and cylinders.

ST-205

BUILDING CONSTRUCTION AND CONCRETE WORK

167 Hours

Setting out of buildings; framing methods for ranch and farm buildings and homes, with special emphasis on stairs, steps and roof construction; maintenance and use of building construction power and hand tools with individual instruction on saw-filing; shop bench projects involving typical joints used in carpentry, joinery and cabinet work; making of templates for interior arched door openings, etc.; correct and economical mixes for various types of concrete construction; making of forms and placing of concrete; surfacing of walks, drives and finished steps, etc.; testing and proportioning of sand and gravel as found on the farm and ranch; selection of site; land levelling; preliminary building operations; basements, framing, concrete block construction, door and window openings; roofing, stairs and steps; insulation and preparation for associated trades, plumber, plasterer, electrician; finishing; general specifications for farm and ranch buildings and homes; talks on individual problems in relation to farm and ranch construction.

W-201

ELECTRIC WELDING

90 Hours

Theory and practice of arc welding, machine and electrode types, A.W.S. specifications, d.c. polarity, machine setting and controls metal transfer, technique in welding, arc welding of cast iron, nature of iron and steel, heat treatments as applied to welding, welding of dynamically loaded frames and structures, studies in weld quality, distortion, etc.

Shop work will consist of flame cutting (hand & machine); arc welding of steels up to 3/8" in all positions padding, stringers weave heads, butt and lap welds.

DIESEL MECHANICS

(Heavy Duty Mechanics)

Industrial expansion has created a keen demand for trained men to repair and maintain heavy construction machinery, highway transportation equipment, agricultural machinery, and petroleum production and processing equipment. This course provides the pre-employment training for mechanics serving these areas. At present, the demand exceeds the number of graduates.

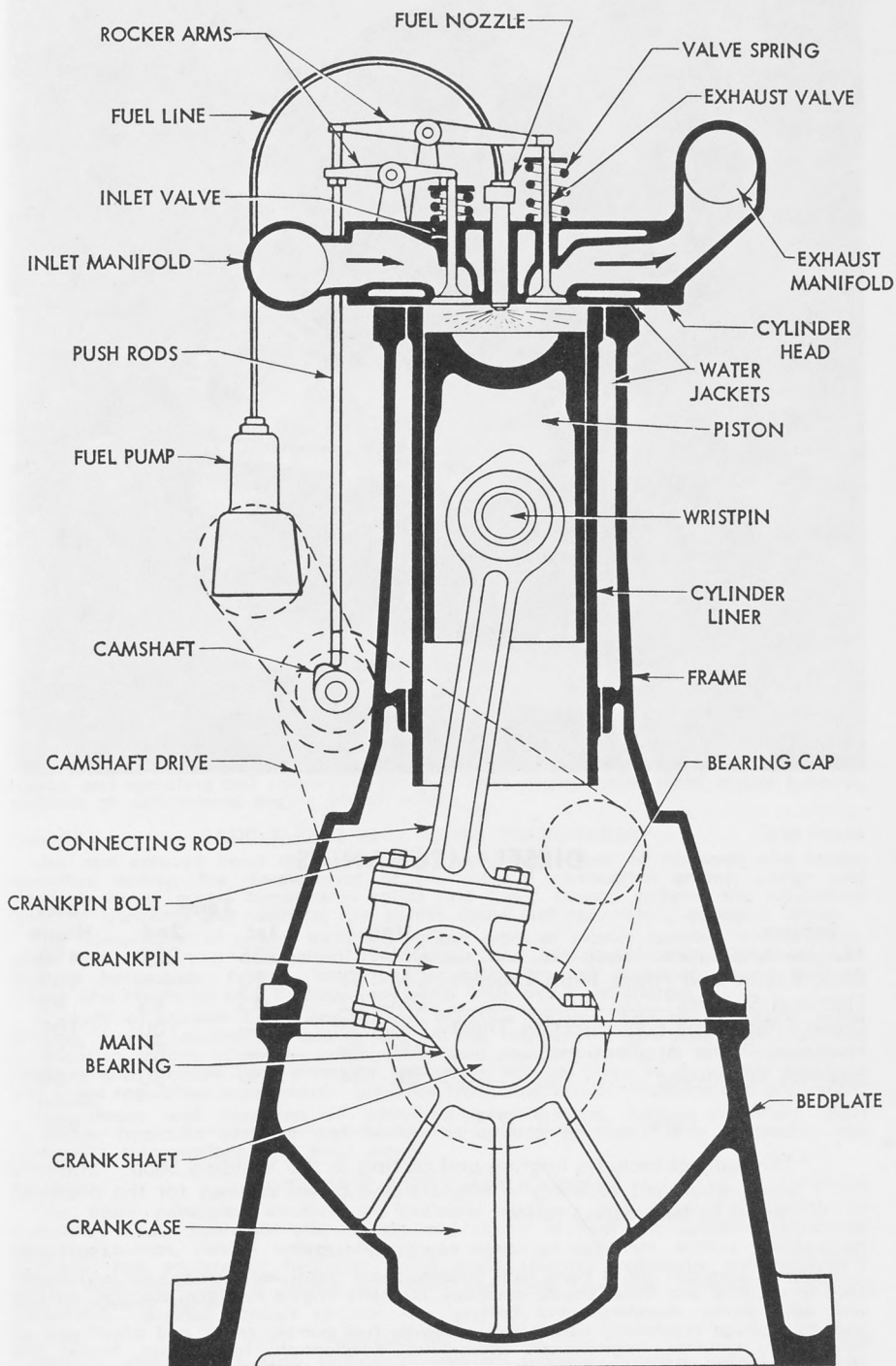
This course is designed to provide a broad, basic knowledge of the principles involved in modern engines and machinery used in the areas served by heavy duty mechanics. The classrooms and shops are equipped with modern facilities for the student to develop the manual skills and practical ability necessary for him to maintain, repair, and isolate troubles in the equipment for which he will be responsible.

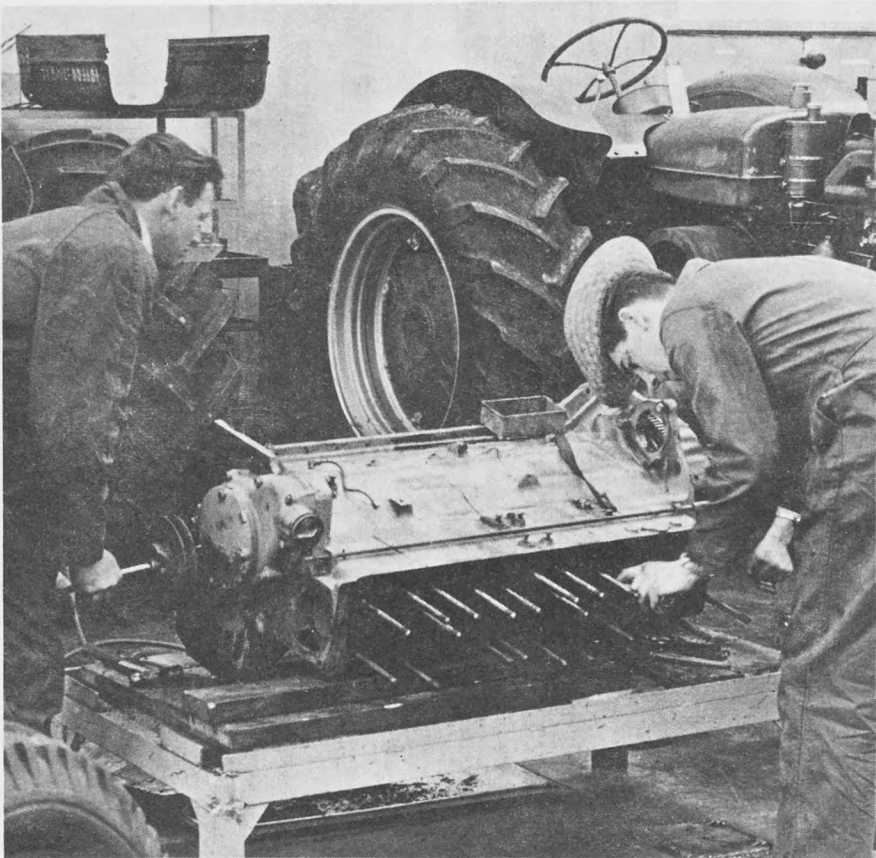
The course consists of two terms, each of fifteen weeks' duration. The second term is open only to those who have successfully completed the first term. Actual hours of instruction per term are 450.

Graduates who are registered in the Heavy Duty Mechanic trade will be granted up to twelve months time credit by the Apprenticeship Board, and will be exempt from first and second year apprentice training if they pass the required Board examinations.

Admission prerequisites and enrolment regulations are given on pages 18 and 22. If the applicant is mature and has had considerable experience with heavy duty equipment, entrance exceptions may be made, after a personal interview with the Registrar or Head of the Department.

A statement of high school results, or other documentary proof, must accompany each application.





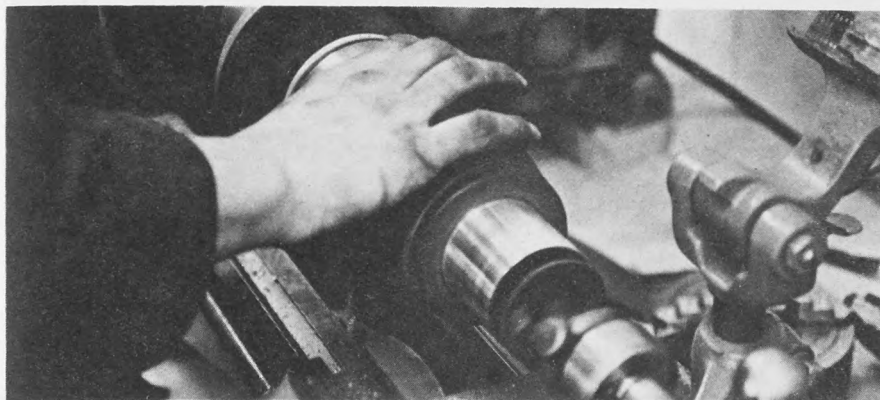
DIESEL MECHANICS

Subject	Unit	Term		Total Hours
		1st	2nd	
* Engine and Tractor Shop	DM-100	225	225	450
Basic Engine and Power Train Theory	DM-101	150	—	150
Electrical Systems	DM-102	45	45	90
Diesel Engine and Fuel Injection Theory	DM-103	—	100	100
Hydraulic Power Applications	DM-104	—	50	50
Business Knowledge	BK-104	30	30	60
Total				900

*This subject includes heating and cutting in the Welding Shop. Students are encouraged to bring in tractors and diesel engines for the overhaul period in the second term.

DM-100 ENGINE AND TRACTOR SHOP 450 Hours

Selection, care and use of hand tools; soldering and metal work; measuring instruments used in gasoline and diesel engine overhaul; complete engine overhaul practice; settings and adjustments; magnetos and battery coil ignition timing; tune-up; generators, starters, voltage regulators; carburetors; gasoline fuel pumps; repair and adjustment of heavy duty clutches, transmissions, drive lines, differentials, final drives, brakes and steering systems; phasing and calibration of diesel pumps, testing injectors, dynamometer testing; preparation of performance reports on overhaul units; theory, safety and application of oxy-acetylene equipment for heating and cutting.



DM-102 ELECTRICAL SYSTEMS 90 Hours

Fundamental units; structure of matter, electric current, units; current, resistance, pressure; direct current circuits, parallel, series; primary and secondary cells; theory of lead acid battery; specific gravity; battery capacity; magnetism; induced emf; self-induced emf, self-induction in a coil; ignition systems, points, condenser, distributor coil operation; generator fundamentals, definition of a generator, principles, commutation, producing a magnetic field, controlling generator output by field strength variation; armature; third brush regulation; the shunt generator; cut-out relay; theory of regulator operation, step voltage control, vibrating control, combined voltage and current regulation, cranking motor fundamentals; magneto operation; theory and operation of the a-c generators and regulators; theory and operation of transistorized ignition system.

DM-103 DIESEL ENGINE AND FUEL INJECTION THEORY 100 Hours

Study of two- and four-stroke cycle diesel and dual fuel engines; piston and combustion chamber design in high speed engines; fuels and lubricants; types of cooling systems and their care; starting systems and aids; high torque, electric, hydraulic, pneumatic and auxiliary starting motors; effects of super-charging and turbo-charging on power output and fuel economy; trouble shooting and maintenance; capital and operating cost comparison of the various engine types; diesel engine tune-up; methods of determining engine power output.

DM-101 BASIC ENGINE AND POWER TRAIN THEORY 150 Hours

Use and care of hand and power tools: soldering; types of fasteners and torque wrenches; safety; the development of the internal combustion engine; design and arrangement of parts; compression ratios and fuels; cooling systems and lubricating systems; lubricants and coolants; fuel pumps (gas) and carburetors; accessory drives.

The transmission of power; including various types of master clutches, transmissions, drive lines, rear end assemblies, final drives and axle types; indicated brake and drawbar horsepower; hitches, loads and operating speeds; types of ground contact, rolling and resistance and slippage; operating costs and fixed charges.

A study of modern diesel engine fuel injection systems, fuel delivery tests, pump phasing, timing, calibrating and timing to the engine; the operating principles and construction details of multi-plunger, individual plunger, distributor type pumps, unit injectors and pressure time principle. Attention will be given to governing principles and speed regulation requirements: governor types; mechanical, hydraulic and pneumatic.

The theory and operation of planetary gear systems, torque converters, fluid couplings, hydraulic clutches and brakes as applied to heavy duty automatic and powershift transmissions and final drives.

DM-104 HYDRAULIC POWER APPLICATIONS 50 Hours

The basic principles involved in hydraulic systems; the physical properties of hydraulic fluids; hydraulic oils; design and repair of hydraulic system components including pumps, control valves, regulators, operating cylinders, motors and piping; hydraulic test equipment; hydraulic power assist steering; automatic and powershift heavy duty transmissions; torque converters and fluid couplings; hydrostatic steering and hydrostatic drives.

BK-104 BUSINESS KNOWLEDGE 60 Hours

Reports, written and oral; writing techniques; spelling; business letters; technical reports; speech training.

Canadian business law; contracts, torts, bailments, insurance, etc.; labor law; unemployment insurance; labor acts; apprenticeship acts, etc.

Drafting Department

G. R. HOWARTH, DEPARTMENT HEAD

ARCHITECTURAL TECHNOLOGY

DRAFTING TECHNOLOGY

PLANNING TECHNOLOGY

(Urban and Regional)

SURVEYING TECHNOLOGY

ARCHITECTURAL TECHNOLOGY

This course is intended to provide a suitably trained and skilled technical assistant to the architect. A person so trained is, as well, a valuable addition to the staffs of many other persons or organizations engaged in the building construction industry. Thus he may find suitable employment in many firms other than those engaged directly in architecture.

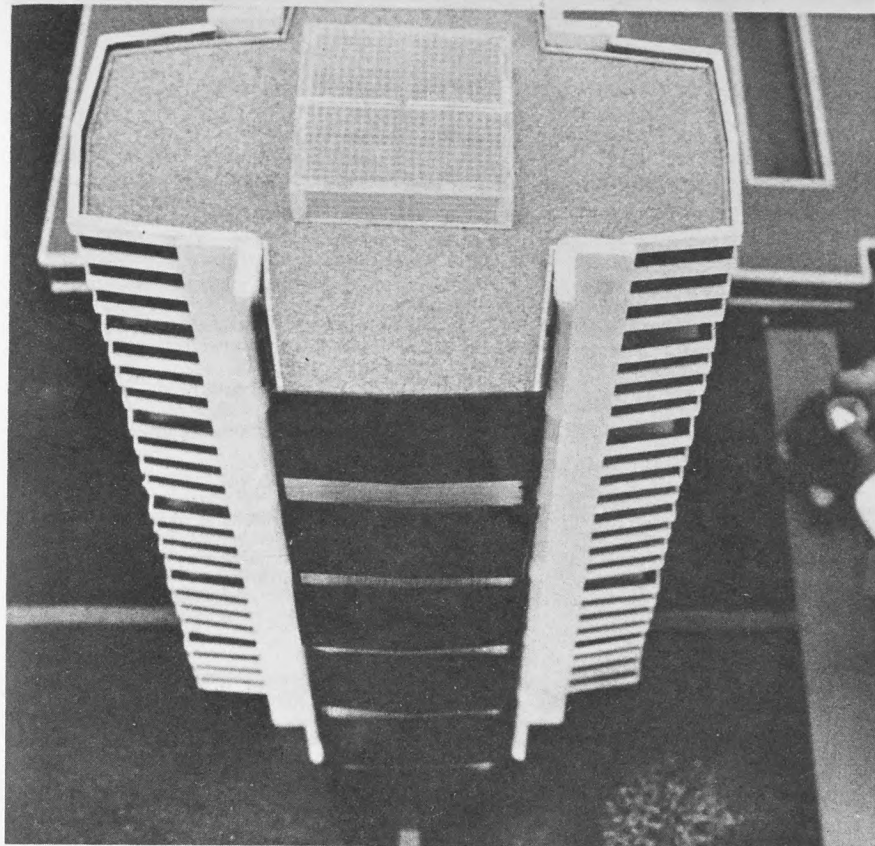
The program of instruction is arranged to provide for development of suitable levels of skills in architectural drawing, detailing and rendering, in the building of architectural models and in the use of constructional materials. Attainment of a high level of skill is essential. Knowledge and appreciation of the problems of the theoretical aspects of architecture is obtained through studies of architectural design, structural design, and the general organizational, contractual and business relationships encountered in the profession. Experience in actual constructional problems is attained through experience in the construction shop and field trips. Tools for effecting these theoretical studies are enhanced through the study of mathematics, physics and English.

Employment is usually obtained with architectural offices, consulting engineers, general contracting offices, specialty construction companies of various kinds, town and district planning boards, materials suppliers, the Central Mortgage and Housing Corporation and other firms engaged in the construction industry.

A graduate may embark on a program to complete his articles in architecture write the professional examinations required, and so attain registration as an architect. However this is not a recommended program. A candidate who desires to become an architect should enrol, rather, at one of the schools of architecture in an accredited university.

Graduates of this course are eligible for membership in the Alberta Society of Engineering Technologists after two years of suitable industrial experience. Please refer to page 27 of the calendar for further information.

Admission prerequisites and enrolment regulations are given on pages 16, 17 and 22. A statement of high school results, or other documentary proof, must accompany each application.



ARCHITECTURAL TECHNOLOGY

Three-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

This course is designed as a continuation of the Alberta Vocational High School program. Students taking the appropriate vocational program will be expected to complete Grade XII and enter "B" year. Others may apply to enter "A" year after completion of an appropriate Grade XI program.

"A" YEAR (Common with "A" Year in Drafting Technology):

Subject	Unit	Hours
Technical Drafting	ATD-130	230
Design and Sketching	ATD-131	65
Materials	ATD-132	65
Machine Shop	MS-132	135
Machine Shop Theory	MS-133	65
Structures Laboratory	ST-134	135
Mathematics	MATH-130	135
Physics	PHYS-130	135
English	ENGL-130	135
Total		1100

ATA-130 TECHNICAL DRAFTING 230 Hours

Instruments and materials; use of instruments; lettering; geometric construction; theory of projection drawing; orthographic projection (multiplanar); single auxiliary views; sections; conventional practices; dimensioning of drawing; pictorial drawing (axonometric, oblique and perspective); reading drawings; reproduction of drawings.

ATA-131 SKETCHING AND DESIGN 65 Hours

A. Freehand sketching; purposes and objectives; materials for sketching; preparations for sketching; stroking techniques and practice; tone building techniques and practice;

light, shade and shadow; texture representation; making transfers; constructing the subject; rendering the subject.

B. Fundamentals of design; introduction and definitions and meanings of design, art, architecture; industrial design; importance of design to the draftsman; industrial and architectural designs; principles of design; units of expression; design problems: line and point; design problems: area and value; design problems: texture.

ATA-132 MATERIALS 65 Hours

A. Introduction to Architectural Materials: purposes and objectives; the classification of the basic architectural materials; properties of building materials; research investigation and materials reports; building codes; residential standards.

B. Wood and Related Products: classifications; properties; seasoning; related wood products.

C. Architectural building components (house); structural and foundations; cladding; openings; interior finishes.

MS-132 MACHINE SHOP 135 Hours

Layout procedures; the use of bench tools; the use of drills and drilling machines; elementary lathe work incorporating parallel and taper turning, boring, knurling, threading, fitting of components; grinding of cutting tools; elementary heat treatment; shop measurement and sketching; demonstration of other machine tools. The purpose of the course is to develop an understanding and appreciation of machine shop work.

MS-133 MACHINE SHOP THEORY 65 Hours

Measuring instruments; layout tools; bench tools; drills and drilling machines; the construction and operation of the engine lathe; metal fasteners; metals in common use; elementary heat treatment; forming of metals. The content of the course will be closely related to the work in the shop.

ST-134 STRUCTURES LABORATORY 135 Hours

The use, care and adjustment of hand and machine tools; joinery: joints, dadoes, rabbets, tongue and groove, etc.; cabinet construction: shelves, drawers, doors, surfacing, installation; frame construction: footings, foundations, framing, stair construction, roofwork, interior and exterior woodwork finish, concrete work: elements of concrete, concrete design.

MATH-130 MATHEMATICS 135 Hours

Rational numbers; equations and inequalities; quadratic equations with rational roots; irrational numbers; functions; graphs; variations; elements of coordinate geometry; the quadratic function; equations of the second degree and their graphs; the sine and cosine functions; oblique triangles; trigonometric equations and identities; polynomials.

PHYS-130 PHYSICS 135 Hours

Mechanics: velocity and acceleration; uniformly accelerated motion; vector properties of velocity; falling bodies; Newton's laws of motion; projectiles; Newton's law of gravitation; statics; equilibrium; centre of mass; friction; work; energy; power conservation of energy; momentum; conservation of momentum.

Heat: temperature and expansion; heat capacity; changes of state; refrigeration and geysers; heat energy and gas laws; mechanical equivalent of heat.

Electricity: static electricity; Coulomb's law; charges in motion; emf; batteries; Ohm's law; series circuits; parallel circuits. Laboratory experiments are conducted for all major topics.

ENGL-130 ENGLISH 135 Hours

This course is aimed at increasing the student's interest and skill in reading, in understanding literature, and in expressing ideas clearly, accurately and effectively in speech and writing. Appropriate texts and readings will be assigned.

"B" YEAR

Subject	Unit	Hours
Architectural Detailing and Drafting	AT-230	270
Architectural Delineation	AT-231	60
Design	AT-232	90
Theory of Structures	AT-233	60
Materials	AT-234	60
Structures Laboratory	ST-234	90
Applied Physics	PHYS-230	90
Mathematics	MATH-230	90
English	ENGL-230	90
Total		900

AT-230 ARCHITECTURAL DRAFTING AND DETAILING 270 Hours
 Review and elaboration of material covered in "A" year with architectural applications: dimensioning, symbols, notes; presentation drawings; detailing of typical large structures; working drawings; complete architectural projects.

AT-231 ARCHITECTURAL DELINEATION 60 Hours
 Introduction: history; rendering in architecture; perspective; rules of composition; study of light; color; equipment and approach to rendering; pencil rendering; pen and ink; water color; tempera; pastels and miscellaneous media; rendering of architectural project.

AT-232 DESIGN 90 Hours
 Introduction; review of fundamentals of design; elements of architectural planning; architectural design; residential design; design problems.

AT-233 THEORY OF STRUCTURES 60 Hours
 Structural materials and their use (emphasis on wood); fundamental mechanical statics; moments; graphical analysis; stress and strain; safety factor and ultimate stresses; moduli, values and formulae; elementary riveted joints; elementary welding; elementary beam theory; beam diagrams; loads on beams; beam design; common structural sections; beam section formulae; center of gravity; timber columns and simple trusses; design project; structural deflections; analysis of frameworks and structural trusses.

AT-234 MATERIALS 60 Hours
 Review of architectural materials; properties of building materials; research, investigation and materials report; National Building Code.
 Basic architectural materials:- natural: wood, stone; manufactured: ceramics, cementations, metal, synthetics; architectural building components for small commercial buildings; structural: foundations, framework; exterior finishes: walls, protective coatings, roofing, sealants; openings: doors and windows, glazing, hardware; interior finishes: flooring, walls, ceiling systems, insulation, adhesives, equipment.

ST-234 STRUCTURES LABORATORY 90 Hours
 Review of first year's work; soil testing; sitework; concrete and reinforced concrete; masonry construction; timber construction; structural steel construction.
 A maximum of one hour per week will be spent on classroom work having to do with the theoretical aspects of the subjects being covered.

PHYS-230 APPLIED PHYSICS 90 Hours
 Heat: temperature measurement; thermal expansion; heat quantities; heat transfer.
 Sound: wave motion; sound waves; acoustics.
 Light: light and illumination; reflection of light; refraction of light; dispersion; spectra; color.

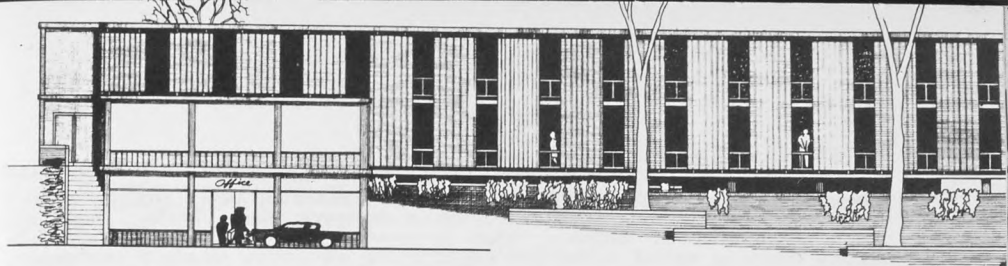
MATH-230 MATHEMATICS 90 Hours
 Review of MATH-130 with emphasis on logarithms; use of tables; polynomials; basic trigonometry and analytic geometry of the straight line; analytic trigonometry and applied problems; analytic geometry of the conic sections and applied problems.

ENGL-230 ENGLISH 90 Hours
 This course is designed to improve the student's ability to write and speak clearly, concisely and effectively. It includes a detailed study and practice of technical writing principles and style; special techniques of technical writing; types and formats of formal and informal reports; business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

"C" YEAR:

Subject	Unit	Hours
Architectural Drafting	AT-300	240
Architectural Detailing	AT-301	90
Architectural Design	AT-302	90
Theory of Structures	AT-303	90
Contracts and Specifications	AT-304	30
Materials and Methods	AT-305	90
Environmental Technologies	AT-306	90
Mathematics	MATH-300	90
English	ENGL-301	90
Total		900

- AT-300 ARCHITECTURAL DRAFTING 240 Hours**
 Review of "B" year work; preparation of working drawings for a small wood or masonry building; survey theory and use of instruments; survey of an actual area and making a survey grid or contour drawing; measuring existing buildings; working as a job team to prepare complete working drawings, details, and a model of a small commercial or office building; theory of office organization; use of reference materials; study of the "National Building Code"; converting sketches to working drawings; complete working drawings for a small commercial building; one week of actual work in an architect's office.
- AT-301 ARCHITECTURAL DETAILING 90 Hours**
 Study of soil mechanics; types of foundations; structural and grade slabs; masonry wall construction; curtain wall construction; structural floor and roof systems; steel details; reinforced concrete details; stair details and miscellaneous details; actual detailing assignments; investigation of buildings under construction (field trips) and research study assignments.
- AT-302 ARCHITECTURAL DESIGN 90 Hours**
 Continuation of AT-232 to develop design ability; lectures and discussions regarding historic and present design influences; review of design fundamentals; past and present influences on contemporary design; industrial design; sculpture; more complex design problems in sketch and in working drawing form; site and orientation design to develop a high degree of appreciation of the processes involved in creating architectural space, thereby improving the level of aesthetic appreciation.
- AT-303 THEORY OF STRUCTURES 90 Hours**
 Advanced theory in structural analysis of steel members; complex built up structural members; analytical design of structural components; advanced beam theory under all types of complex loading; advanced column analysis; beam-column analysis; statically indeterminate structural analysis; three moment equations; moment areas; graphical methods for analyzing trusses and frameworks; deflections; moment distributions leading to computer methods; modern methods of plastic design in steel structures; concrete design theory for foundations, walls, pillars, slabs, beams, columns, T beams, stairs, monolithic construction; reinforced members; prestressed and post tensioned concrete members; design data usage; modern limit (ultimate strength) design formulae; architectural projects.
- AT-304 CONTRACTS AND SPECIFICATIONS 30 Hours**
 Objectives of the unit: organization of the building industry; definition of terms; personal and ethical relations in business; owner, architect, contractor, sub-contractor; elements of contracts; standard documents of the R.A.I.C. law, its origin, nature and development; the Canadian court system; competitive bidding and contracting procedures; advertising and letting of the contract; general conditions of the contract; preparations of specifications; technical specifications; building codes and zoning; Workmen's Compensation Act.
- AT-305 MATERIALS AND METHODS 90 Hours**
 Continuation of AT-234 to give further study of Architectural materials with emphasis on: characteristics of materials; methods of the use of materials and details of construction; maintenance factors; cost comparisons of materials and construction methods; developing the student ability to assess and choose the proper materials and method of construction for a particular location, condition, climate and economical situation.
- AT-306 ENVIRONMENTAL TECHNOLOGY 90 Hours**
 Heating and air conditioning; architectural acoustics; sanitation; water supply; lighting; electrical installations; vertical transportation.
- MATH-300 MATHEMATICS 90 Hours**
 Review of MATH-230; differentiation and integration of polynomials; applied problems; differentiation and integration of transcendental functions; further applications.
- ENGL-301 ENGLISH 90 Hours**
 This is an intensive course which aims to improve students' critical faculties as well as their writing, speaking and reading skills. The course begins with a review of library research reports, business correspondence, and technical explanations. It includes study of the larger elements of report writing, methods of gathering report data, formal and informal report formats, and the uses of different types of reports — with emphasis on the formal technical report. It also includes a study of the organization and delivery of short speeches (including technical talks), and the conduct of business meetings. The structure and content of published writings, mostly in science and technology, are analyzed and evaluated. Selected readings are also assigned for book reports and class discussions.



ARCHITECTURAL TECHNOLOGY

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

This course is available to students who have completed Grade XII or who have 100 Alberta High School credits, with standings as shown on page 16.

FIRST YEAR

Subject	Unit	Hours
Drafting	AT-100	240
Design	AT-101	90
Drawing and Sketching	AT-103	30
Theory of Structures	AT-104	60
Materials	AT-105	60
Construction Technology	ST-101	180
Mathematics	MATH-107	90
Physics	PHYS-107	60
English	ENGL-100	90
Total		900

AT-100 DRAFTING 240 Hours

Class organization; choice of instruments; use of instruments; lettering; applied geometry; theory of projection; dimensions and notes; presentation drawings; working drawings.

AT-101 DESIGN 90 Hours

Introduction to fundamentals of design; fundamentals of design; introduction to architectural design; architectural design, architectural design problem.

AT-103 DRAWING AND SKETCHING 30 Hours

Introduction: sketching equipment and materials; technical sketching and artistic sketching; basic techniques and methods; scale and proportion; still life sketching; orthographic and pictorial sketching methods; architectural rendering; sketching construction details; mechanical perspective and architectural presentation.

AT-104 **THEORY OF STRUCTURES** **60 Hours**

Properties of structural materials; principles of mechanics; direct stresses; applied stresses and their characteristics; deformation; moments; Beam Theory; shear and bending moments; beam diagrams; theory of bending and properties of sections; elementary theory of welded, bolted and riveted joints; elementary structural frameworks, columns and struts; design of structural members; elementary mathematical analysis of structures.

Timber construction: application of basic theory; design of timber beams; joist tables; design of joists; plank or mill floors; timber columns.

AT-105 **MATERIALS** **60 Hours**

The materials used in architecture shall be studied with emphasis on the following: physical and chemical properties: types and uses; applications; history and manufacture. Some attention shall be given to detailing methods and cost comparisons. The following sections shall be studied: properties of building materials; materials reports; R.A.I.C. file; National Building Code (Residential Standards); materials of nature — stone, wood; materials of man (manufactured) — ceramics, cementitious materials, metals, synthetics; architectural building components; structural-foundations; framework; exterior finishes (cladding) — exterior walls, protective coatings, roofing, sealants; openings — doors and windows; glazing, hardware; interior finishes — flooring, interior walls, ceiling systems, insulation adhesives, equipment.

ST-101 **CONSTRUCTION TECHNOLOGY** **180 Hours**

The use, care and maintenance of hand and power tools; house framing sections; millwork; concrete work; field trips for inspection of manufacturing processes and constructional details.

MATH-107 **MATHEMATICS** **90 Hours**

A study of the functional approach in elementary mathematical analysis with emphasis on comprehension of the fundamental processes: numerical calculations; real numbers; approximate numbers; scientific notation; significant figures; slide rule; logarithms; correspondences; functions; rectangular coordinates; graphs of functions; equations of curves; function notation; types of functions; the limiting value of a function; simple algebraic functions; trigonometric functions; right-triangle trigonometry, analytical trigonometry; exponential and logarithmic functions; simple derivations.

PHYS-107 **PHYSICS** **60 Hours**

Properties of matter: measurement; elastic properties of solids.

Heat: temperature measurement; thermal expansion; heat quantities; heat transfer.

Mechanics: vectors; velocity and acceleration; force and motion; friction; work and power; energy; torque.

ENGL-100 **ENGLISH** **90 Hours**

This is an intensive course designed to improve the students' critical thinking as well as their writing and reading skills. The course begins with instruction on how to study. It demonstrates how elementary logic, fundamental writing techniques, outlining, summarizing, paragraphing, vocabulary, grammar, spelling, capitalization and punctuation are applied to the writing of short, informal library research reports, business correspondence, and technical explanations. It also includes critical evaluations of the structure and content of published writings, especially in science and technology.

SECOND YEAR

Subject	Unit	Hours
Drafting	AT-200	330
Design	AT-201	90
Theory of Structures	AT-204	60
Materials and Methods	AT-205	90
Mechanical Equipment	DFTG-207	60
Contracts and Specifications	DFTG-209	30
Mathematics	MATH-207	90
Physics	PHYS-207	60
English	ENGL-200	90
Total		900

AT-200 **DRAFTING** **330 Hours**

Review first-year work; preparation of working drawings and details for a small wood-construction building; survey theory and use of instruments; survey of an actual area, and making survey and contour drawings; measuring existing buildings; detailing of foundations, masonry walls, curtain walls, structural steel details and reinforced concrete details; investigation of buildings under construction; working as a job team to prepare complete working drawings and details for a small commercial or office

building; theory of architectural office organization; use of reference material; use and set up of trade rules; intense study of National Building Code; converting sketches to working drawings; complete working drawings for a small commercial building. One week of actual work in an architect's office.

AT-201 DESIGN 90 Hours

Continuation of AT-101 to develop design ability; lectures and discussions regarding historic and present design influences, including related fields such as industrial design and sculpture; more complex design problems in sketch and in working drawing form; site and orientation design; to develop a high degree of appreciation of the processes involved in creating architectural space, thereby improving the level of aesthetic appreciation.

AT-204 THEORY OF STRUCTURES 60 Hours

Continuation of AT-104 to give further applications of theory to more complex structures in steel and concrete construction; analysis of trusses and frameworks; design of built up members; basic graphical analysis; deflections; indeterminate structures; concrete design; reinforced and prestressed members of all structural components, with applications to architectural projects.

AT-205 MATERIALS AND METHODS 90 Hours

The study of materials of architectural construction shall be continued with emphasis on the following: characteristics of materials; methods of the use of materials and details of construction; maintenance factors; cost comparisons of materials and construction methods; developing the students' ability to assess and choose the proper materials and method of construction, for a particular location, condition, climate and economical situation.

Materials shall be studied under the following sections: the properties of building materials; materials and methods report, R.A.I.C. file; National Building Code of Canada 1965; materials of nature — stone, wood; materials of man (manufactured) — ceramics, cementitious materials, metals, synthetics; estimating; materials samples.

Methods shall be studied, that is, the selecting of building materials and types of construction systems as follows: foundations; framing materials; framing systems; structural floor systems; roof systems; wall assembly; ceiling systems; wide span designs; contemporary structural forms.

DFTG-207 MECHANICAL EQUIPMENT 60 Hours

Heating and air conditioning; architectural acoustics; sanitation; water supply; lighting; electrical installations; vertical transportation.

DFTG-209 CONTRACTS AND SPECIFICATIONS 30 Hours

Objectives of the unit: organization of the building industry; definition of terms; personal and ethical relations in business; owner, architect, contractor, sub-contractor; elements of contracts; standard documents of the R.A.I.C.; law, its origin, nature and development; the Canadian court system; competitive bidding and contracting procedures; advertising and letting of the contract; general conditions of the contract; preparations of specifications; technical specifications; building codes and zoning; Workmen's Compensation Act.

MATH-207 MATHEMATICS 90 Hours

Analytic geometry of the straight line and conic sections and an introduction to the methods of the differential calculus; equations of a straight line, circle, parabola, ellipse and hyperbola; derivatives of polynomials; rate of change problems; differentials; approximations, maxima and minima; curve sketching; applied problems in maxima and minima; derivatives of trigonometric functions; derivatives of exponential and logarithmic functions; inverse trigonometric functions; derivatives of inverse trigonometric functions; simple integrals, areas and volumes (time permitting).

PHYS-207 PHYSICS 60 Hours

Optics: light and illumination; reflection; refraction; thin lenses; the eye and optical instruments; dispersion; spectra.

Sound: sound waves and acoustics.

Electricity: electric charges and fields; electrical potential; current; electric circuits; measurements; magnetic materials; electric instruments; electrical energy and power; induced emfs; electric-magnetic induction.

ENGL-200 ENGLISH 90 Hours

This is an intensive course which aims to improve students' critical faculties as well as their writing, speaking, and reading skills. The course begins with a review of library research reports, business correspondence, and technical explanations. It includes study of the larger elements of report writing, methods of gathering report data, formal and informal report formats and the uses of different types of reports — with emphasis on the formal technical report. It also includes a study of the organization and delivery of short speeches (including technical talks), and the conduct of business meetings. The structure and content of published writings, mostly in science and technology, are analyzed and evaluated. Selected readings are also assigned for book reports and class discussions.

DRAFTING TECHNOLOGY

This course is designed to train young men and women for positions as draftsmen in Western Canadian industry. The aim is to produce draftsmen with a high degree of skill and with a basic understanding of mechanical, structural and topographical drawing and design.

Practical aspects of the various areas of design will be studied through the media of practical work done in the machine shop, the construction workshop and by surveying in the field. Trips to machine shops, construction projects and other industrial points of interest will be made.

The nature of Alberta industry which is highly varied, but which provides only a small number of manufacturing concerns, has created a demand for highly skilled draftsmen with knowledge and experience sufficiently wide to be able to handle problems in several different areas of design. The course aims to meet this demand.

Related courses are offered in mathematics, science and English. These subjects provide the tools for the solution of many of the practical problems encountered in design. Further, they provide the individual with an educational background which helps to fit him for positions of responsibility.

Graduates of this course are eligible for membership in the Alberta Society of Engineering Technologists after two years of suitable industrial experience.

Please refer to page 27 of the calendar for further information.

Admission prerequisites and enrolment regulations are given on pages 16, 17 and 22. A statement of high school results, or other documentary proof, must accompany each application.



DRAFTING TECHNOLOGY

Three-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

This course is designed as a continuation of the Alberta Vocational High School program. Students taking the appropriate vocational program will be expected to complete Grade XII and enter "B" year. Others may apply to enter "A" year after completion of an appropriate Grade XI program.

"A" YEAR (common with "A" Year in Architectural Technology):

Subject	Unit	Hours
Technical Drafting	ATD-130	230
Design and Sketching	ATD-131	65
Materials	ATD-132	65
Machine Shop	MS-132	135
Machine Shop Theory	MS-133	65
Structures Laboratory	ST-134	135
Mathematics	MATH-130	135
Physics	PHYS-130	135
English	ENGL-130	135
Total		1100

ATD-130

TECHNICAL DRAFTING

230 Hours

Instruments and materials; use of instruments; lettering; geometric construction; theory of projection drawing; orthographic projection (multiplanar); single auxiliary views; sections; conventional practices; dimensioning of drawing; pictorial drawing (axonometric, oblique and perspective); reading drawings; reproduction of drawings.

A. Introduction to Architectural Materials: purposes and objectives; the classification of the basic architectural materials; properties of building materials; research investigation and materials reports; building codes housing standards.

B. Wood and Related Products; classifications; properties; seasoning; related wood products.

Layout procedures; the use of bench tools; the use of drills and drilling machines; elementary lathe work incorporating parallel and taper turning, boring, knurling, threading, fitting of components; grinding of cutting tools; elementary heat treatment; shop measurement and sketching; demonstration of other machine tools. The purpose of the course is to develop an understanding and appreciation of machine shop work.

Measuring instruments; layout tools; bench tools; drills and drilling machines; the construction and operation of the engine lathe; metal fasteners; metals in common use; elementary heat treatment; forming of metals. The content of the course will be closely related to the work in the shop.

The use, care and adjustment of hand and machine tools; joinery: joints, dados, rabbets, tongue and groove, etc.; cabinet construction: shelves, drawers, doors, surfacing, installation; frame construction: footings, foundations, framing, stair construction, roofwork, interior and exterior woodwork finish, concrete work: elements of concrete, concrete design.

Rational numbers; equations and inequalities; quadratic equations with rational roots; irrational numbers; functions; graphs; variations; elements of coordinate geometry; the quadratic function; equations of the second degree and their graphs; the sine and cosine functions; oblique triangles; trigonometric equations and identities; polynomials.

Mechanics: velocity and acceleration; uniformly accelerated motion; vector properties of velocity; falling bodies; Newton's laws of motion; projectiles; Newton's law of gravitation; statics; equilibrium; center of mass; friction; work; energy; power; conservation of energy; momentum; conservation of momentum.

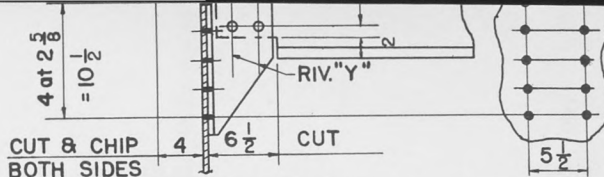
Heat: temperature and expansion; heat capacity; changes of state; refrigeration and geysers; heat energy and gas laws; mechanical equivalent of heat.

Electricity: static electricity; Coulomb's law; charges in motion; emf; batteries; Ohm's law; series circuits; parallel circuits. Laboratory experiments are conducted for all major topics.

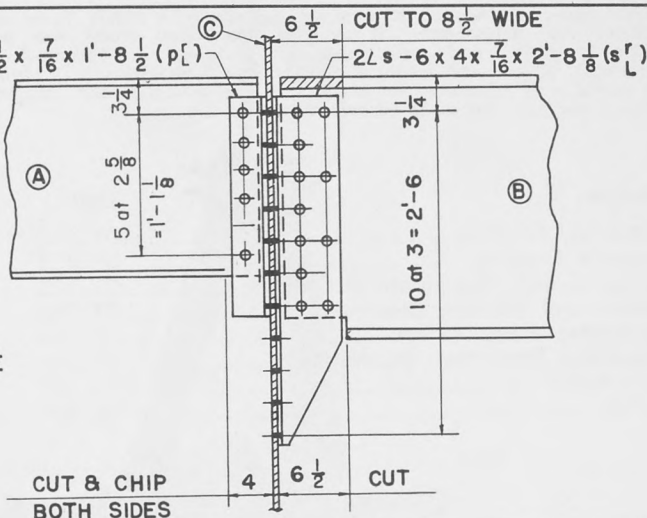
This course is aimed at increasing the student's interest and skill in reading, in understanding literature, and in expressing ideas clearly, accurately and effectively in speech and writing. Appropriate texts and readings will be assigned.

Subject	Unit	Hours
Mechanical Drafting	DT-230	180
Descriptive Geometry	DT-231	90
Engineering Surveying	DT-232	90
Machine Shop	MS-232	120
Machine Shop Theory	MS-233	60
Structures Laboratory	ST-235	90
Mathematics	MATH-231	90
Applied Physics	PHYS-231	90
English	ENGL-230	90
Total		900

SECTION E-E



SECTION E-E



DT-230

MECHANICAL DRAFTING

180 Hours

Review and elaboration of ATD-130; double auxiliaries; rotation; intersections and developments of surfaces; blue-print reading; screw-threads; threaded fasteners; keys, rivets and springs; welding drawings; pipe threads; shop terms and processes; working drawings

DT-231

DESCRIPTIVE GEOMETRY

90 Hours

Review of orthographic projection; introduction to descriptive geometry; fundamental views of descriptive geometry; point, line and plane problems; revolution; curved lines and surfaces; intersection of surfaces; practical problems from mechanical and civil engineering areas.

DT-232

ENGINEERING SURVEYING

90 Hours

Care and use of: surveyor's tape, clinometer and other chaining aids; engineer's transit and engineer's level; transit, tape, stadia and plane table surveys; methods of topographical surveying and plotting survey information; typical field projects in engineering surveying.

MS-232

MACHINE SHOP

120 Hours

Study of the parts of a lathe together with their care and operation; how to grind tool bits; practice in parallel and taper turning, threading, knurling, boring filing and polishing; making bushings, running and press fits; truing centres, and heat treatment of steel; use of lathe attachments; fitting of parts and spring winding.

MS-233

MACHINE SHOP THEORY

60 Hours

Advanced uses of lathes and production work; shaping machine; milling machine; fundamentals of gearing; grinding machines; heat treating theory and practice; gauging in industry; production standards. The theory will be closely co-ordinated with the shop work.

ST-235

STRUCTURES LABORATORY

90 Hours

Lab work emphasizing the seeing, handling, examining, assembling and placing of materials and components in connection with the following: concrete; reinforced concrete; pre-cast concrete; masonry construction; timber construction; structural steel construction.

MATH-231

MATHEMATICS

90 Hours

Review of MATH-130 with emphasis on logarithms, use of tables, polynomials, basic trigonometry and analytic geometry of the straight line; analytic trigonometry and applied problems; analytic geometry of the conic sections and applied problems.

PHYS-231

APPLIED PHYSICS

90 Hours

Heat: temperature measurements; thermal expansion; heat quantities; heat transfer; thermodynamics.

Mechanics: statics; basic principles; coplanar parallel forces; coplanar concurrent forces; noncoplanar forces; noncoplanar concurrent and noncoplanar concurrent forces systems; friction; centroids; centers of gravity; moments of inertia; miscellaneous problems; work; energy; power.

90 Hours

This course is designed to improve the student's ability to write and speak clearly, concisely and effectively. It includes a detailed study and practice of technical writing principles and style; special techniques of technical writing; types and formats of formal and informal reports; business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

"C" YEAR:

Subject	Unit	Hours
Mechanical Drafting	DT-300	180
Structural Drafting	DT-301	180
Geological and Topographical Drafting	DT-302	90
Architectural Working Drawings	DT-306	90
Engineering Fundamentals	DT-303	90
Design and Production Illustration	DT-307	90
Mathematics	MATH-301	90
English	ENGL-301	90
Total		900

DT-300	MECHANICAL DRAFTING	180 Hours
<p>Machine design; dimensioning and tolerancing; shop processes; working drawings; machine elements; production aids; welding drawings; machine design example; piping drawing; pipe and fittings; controls; specification of parts; piping symbols; types of drawings; instrumentation; pressure vessel drawing; introduction; materials; vessel fittings; the unfixed pressure vessel code; working drawings of vessels.</p>		

DT-301	STRUCTURAL DRAFTING	180 Hours
<p>Structural steel detailing; introduction; plain material; fabrication of structural steel; simple square framed beams; bolted connections; fillet welding; welded connections; detailing beams and columns; truss and bracing connections; drafting room procedure; reinforced concrete detailing; introduction; fabricating; shop practice; reinforcing materials and accessories; engineering and placing drawings; timber structure detailing; introduction; design of timber members; connection design; detail drawings of timber construction.</p>		

DT-302	GEOLOGICAL AND TOPOGRAPHICAL DRAFTING	90 Hours
<p>Introduction to topographical and geological drafting, technique of drawing with ink; topographic maps; introduction to elementary geology; geological maps; introduction to contours and relief; use of color on maps; introduction to photogrammetry; methods of plotting traverses; survey computations; calculating machines; calculation of earth works; system of subdivision of Canada Lands; introduction to map projectives.</p>		

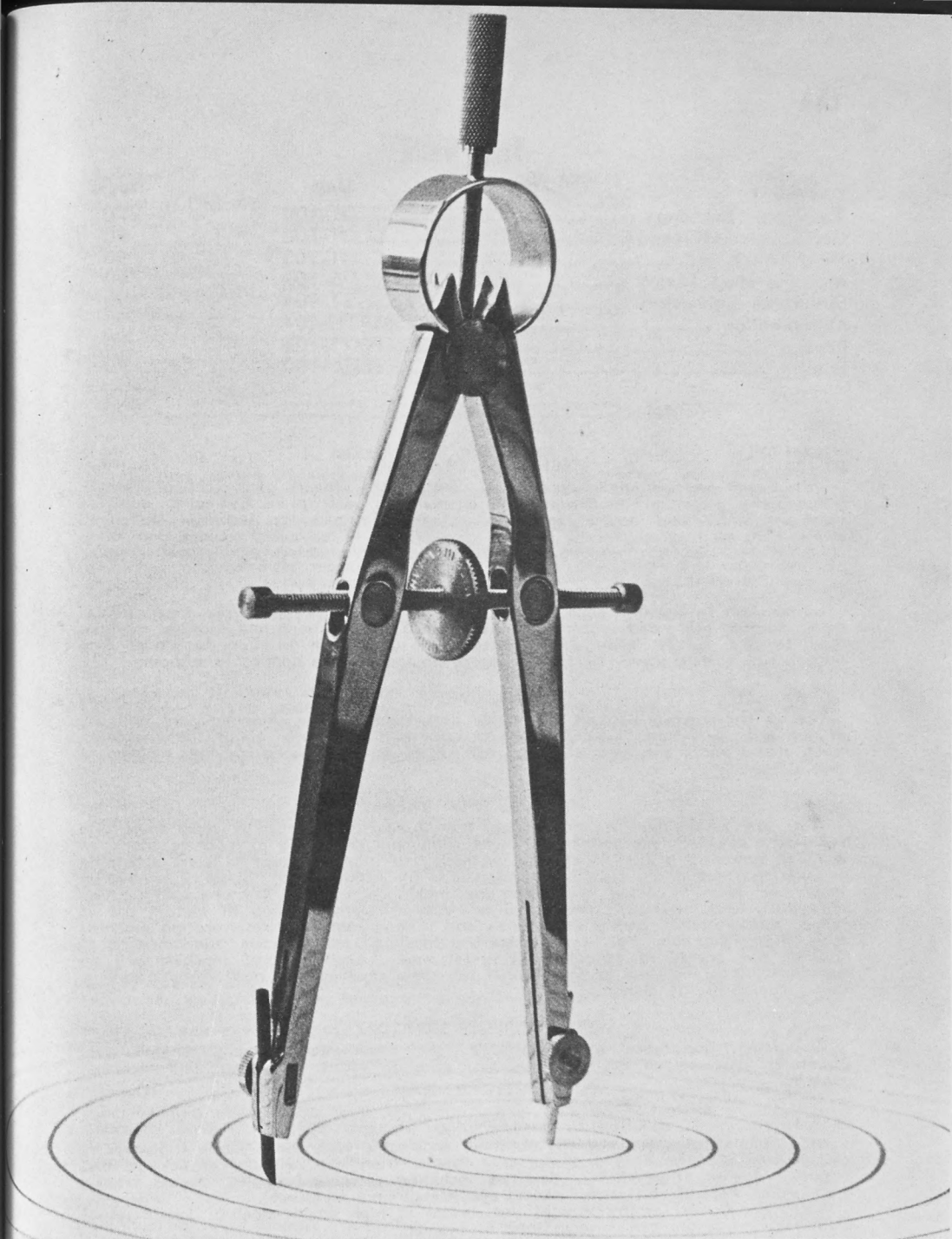
DT-306	ARCHITECTURAL WORKING DRAWINGS	90 Hours
<p>Research, investigation and technical reports on masonry materials, timber construction or curtain walls in modern construction; documents of the construction contract; architectural drawing; working drawings and detailing technique; handbook design; elements of mechanical systems; stair construction and design; schedules on architectural drawings; title blocks and notes on architectural drawings; design and detailing of masonry.</p>		

DT-303	ENGINEERING FUNDAMENTALS	90 Hours
Engineering materials; stress and deformation; riveted, bolted, and welded joints; torsion; shear and bending in beams; stress in beams; design of beams; deflection of beams; combined stresses; column design.		

DT-307	DESIGN AND PRODUCTION ILLUSTRATION Information not yet available.
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MATH-301	MATHEMATICS	90 Hours
Review of MATH-231, differentiation and integration of polynomials; applied problems; differentiation and integration of transcendental functions, further applications.		

ENGL-301	ENGLISH	90 Hours
<p>This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal technical reports. It also includes a study of the mass media, and a study and application of the principles of public speaking; types of formal and informal speeches; and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluation.</p>		



DRAFTING TECHNOLOGY

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

This course is available to students who have completed Grade XII or who have 100 Alberta High School credits with standings as shown on page 16.

FIRST YEAR

Subject	Unit	Hours
Technical Drafting	DT-100	270
Geological and Topographical Drafting	DT-102	90
Field Work	DT-105	90
Machine Shop Theory	MS-102	90
Structures Laboratory	ST-104	90
Mathematics	MATH-104	90
Physics	PHYS-104	90
English	ENGL-100	90
Total		900

DT-100 TECHNICAL DRAFTING 270 Hours

Instruments and materials; geometrical constructions; theory of projection drawing; orthographic projection; multi-view and axonometric; descriptive geometry; auxiliary views — single and double; rotation; sections; dimensioning; technical sketching; intersections and developments; oblique projections — cavalier, cabinet and other obliques; shop processes; working drawings; reproduction of drawings; blueprint reading.

DT-102 GEOLOGICAL AND TOPOGRAPHICAL DRAFTING 90 Hours

Introduction to topographical drafting; techniques in drawing in ink; topographical maps; contour and relief maps; earthworks; earth cross-sections and profiles; methods used to plot survey information; systems of sub-division of Canada lands; map projections; plotting survey field notes; aerial photography as applied to mapping.

DT-105 FIELD WORK 90 Hours

Use of the surveyor's chain, clinometer and other aids to chaining; care and use of the engineer's transit; transit and tape surveys; care and use of the engineer's level; stadia and plane table surveys; methods of topographical surveying; plotting of field data.

MS-102 MACHINE SHOP THEORY 90 Hours

This unit is designed to familiarize the student with machine shop tools and equipment and with machining operations commonly performed in machine shops, to acquaint him with modern production methods and to enable him to learn something of shop terminology and established standards of workmanship. Subjects covered in theory are: kinds of metals in common use, making of castings, hot and cold forming of metals, heat treatment, destructive and non-destructive testing of metals, use of lathes, screw threads, boring mills, drills and drilling machines, reciprocating machine tools, the milling machine, use of broaching machines and grinders, fundamentals of gearing, the phases of metrology in metal work. Each type of machine will be demonstrated to the class in the shop at the same time as that particular machine is being studied in the classroom.

ST-104 STRUCTURES LABORATORY 90 Hours

Recognition and handling of materials for frame, masonry, concrete and steel structures; assembly of units and models; concrete forms; field trips and technical reports.

MATH-104 MATHEMATICS 90 Hours

Approximate numbers; scientific notation; slide rule; logarithms; plane trigonometry including solution of right triangles and oblique triangles; functions of positive and negative angles; trigonometric identities including compound angles, double angles, half angles, products and sums; radian and sexagesimal measures.

Analytic geometry of the straight line, review of high school algebra, derivatives of polynomials; maxima and minima; rates of change.

PHYS-104 PHYSICS 90 Hours

Measurement; liquids at rest; properties of gases; temperature measurement, thermal expansion; heat quantities; heat transfer; vectors, forces at a point; velocity and acceleration; force and motion; friction; work and power; energy; torque; elastic properties of solids.

ENGL-100 ENGLISH 90 Hours

This is an intensive course designed to improve the student's critical thinking as well as their writing and reading skills. The course begins with instruction on how to study. It demonstrates how elementary logic, fundamental writing techniques, outlining, summarizing, paragraphing, vocabulary, grammar, spelling, capitalization and punctuation are applied to the writing of short informal library research reports, business correspondence, and technical explanations. It also includes critical evaluations of the structure and content of published writings, especially in science and technology.

SECOND YEAR

Subject	Unit	Hours
Mechanical Drafting	DT-200	180
Survey and Topographical Drafting	DT-202	60
Structural Drafting	DT-204	120
Structures Lab.	DT-206	90
Machine Shop Lab. and Theory	MS-202	180
Mathematics	MATH-204	90
Physics	PHYS-204	90
English	ENGL-200	90
Total		900

DT-200 MECHANICAL DRAFTING 180 Hours

Introduction; review of working drawings; descriptive geometry; welding drawings; pressure vessel drawings; piping drawings; machine drawing and design.

DT-202 SURVEY AND TOPOGRAPHICAL DRAFTING 60 Hours

Types and use of geological symbols; introduction to historical and physical geology; construction of geological maps from surface geology, and information from drilled wells; methods of colouring maps, plans and illustrative techniques; map projections and systems of subdivisions of Canada lands: conical, cylindrical, azimuthal and conventional; survey computations and calculation of land areas; plotting survey field notes and earthworks.

DT-204 STRUCTURAL DRAFTING 120 Hours

Introduction; structural steel; plain material; fabrication of structural steel; simple square framed beams; strength of materials; fillet welding; welded connections; bolted connections; detailing beams and columns; truss and bracing connections; drafting room procedure; reinforced concrete detailing; fabricating shop practice and materials; engineering and placing drawing; preparation of placing drawings.

DT-206 STRUCTURES LABORATORY 90 Hours

Research and technical reports on materials and methods of building; contract documents — the contract, working drawings, specifications and general conditions of a construction contract; architectural drawings — preliminaries, presentation, detailing, working drawings; handbook design; elements of mechanical systems — plumbing, heating, electrical; stair construction and design; schedules on architectural drawings; title blocks and notes; building materials and the R.A.I.C. file.

MS-202 MACHINE SHOP LAB. 180 Hours

This unit is a continuation of MS-102 but includes 90 hours of actual shop work. Subjects covered in theory are: measuring instruments and their uses, fundamentals of bench work, laying out work, fundamentals of drilling and drilling machines, methods of cutting threads, operation of the engine lathe, operation of the shaper, fundamentals of grinding, milling and planing. Machine shop work consists of bench work in which two projects are attempted and machine work in which four projects are attempted.

MATH-204 MATHEMATICS 90 Hours

Analytic geometry of the conic sections; further work on derivatives of algebraic functions; rates of change; maxima and minima; differentials; approximations; derivatives of exponential and logarithmic functions; inverse trigonometric functions; derivatives of inverse trigonometric functions; integrals of powers; areas and volumes.

PHYS-204 PHYSICS 90 Hours

Rotation of rigid bodies; momentum; uniform circular motion, centripetal force, banking of tracks; electric current, Ohm's law, electric circuits; electric measurements; magnetic effect of current; electric instruments; electrical energy and power; induced emf's; electromagnetic induction; capacitance; a-c series circuits.

ENGL-200 ENGLISH 90 Hours

This is an intensive course which aims to improve students' critical faculties as well as their writing, speaking, and reading skills. The course begins with a review of library research reports, business correspondence, and technical explanations. It includes study of the larger elements of report writing, methods of gathering report data, formal and informal report formats, and the uses of different types of reports — with emphasis on the formal technical report. It also includes a study of the organization and delivery of short speeches (including technical talks) and the conduct of business meetings. The structure and content of published writings, mostly in science and technology, are analyzed and evaluated. Selected readings are also assigned for book reports and class discussions.

PLANNING TECHNOLOGY

(Urban and Regional)

After a century of generally unplanned growth the attention of Canadians has been abruptly brought to sharp and urgent focus on the problems of planning and developing the communities in which they live. The Federal government recognizing the urgent necessity for action in this direction has made large funds available to provincial and municipal governments to finance the activities.

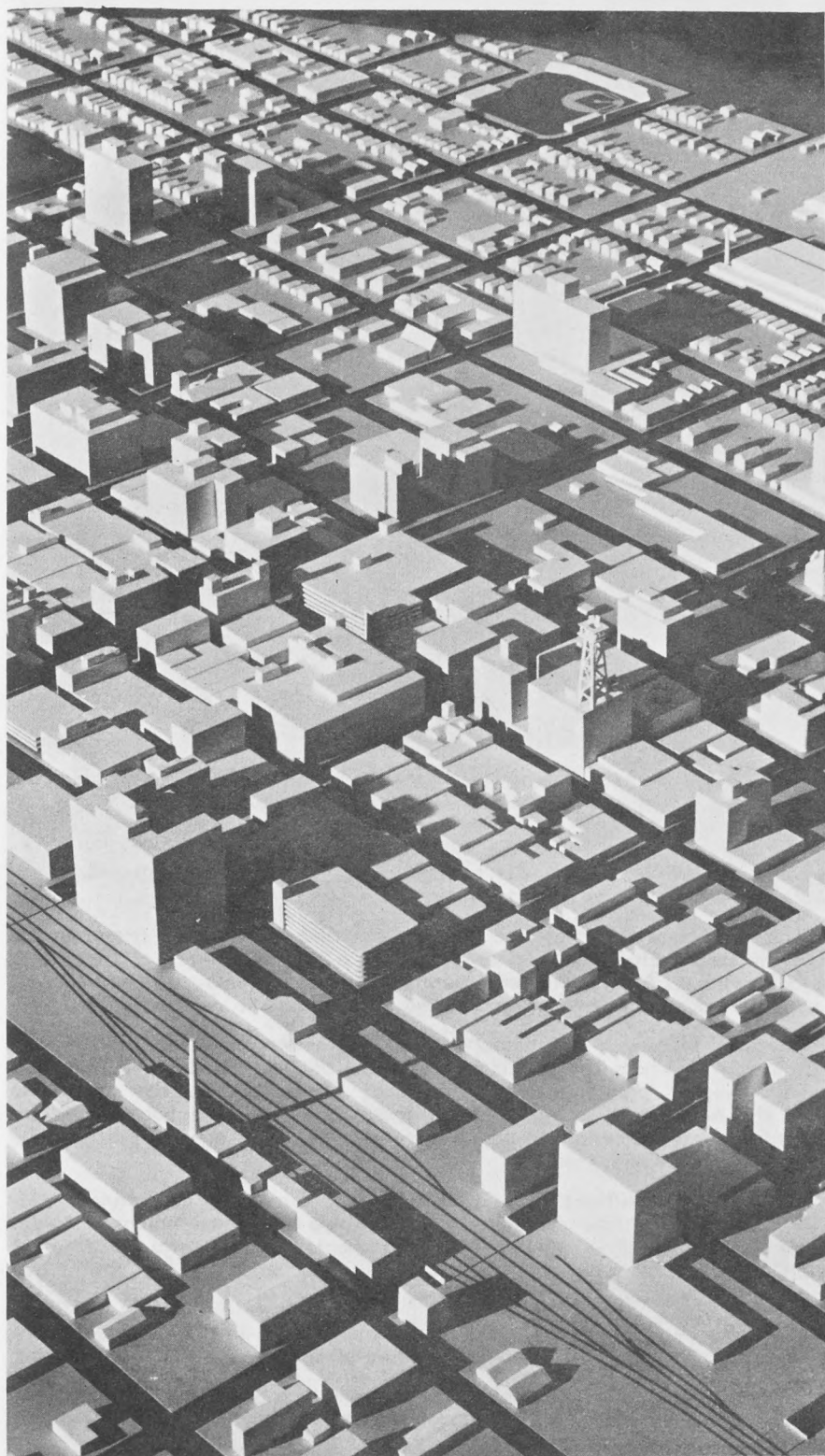
Extensive schemes have been conceived for the creation of new and the redevelopment of old areas of our communities. Concepts require action: action requires people.

Many areas need the services of trained and educated people. Provincial and regional planning offices, city planning departments and many private consultants will plan and implement these schemes. A small army of professional planners and planning technologists is required. Canada at present has few professional planners and no planning technologists.

To help satisfy this demand for trained personnel, the Southern Alberta Institute of Technology has been authorized to offer a new course — Planning Technology. An advisory committee has been formed which has in turn appointed a curriculum committee. The curriculum committee is engaged in preparing the syllabus, and a two year program will be offered beginning in September, 1967.

A special feature of the course is the proposal to provide facilities for a post graduate year of training for technologists who have graduated from Architectural, Drafting or Surveying Technologies. The training of persons already employed in planning offices is also to be accommodated on a selective subject basis during day classes.

Further details may be obtained by enquiry to the Drafting Department or the Registrar of the Southern Alberta Institute of Technology.



SURVEYING TECHNOLOGY

The objectives of this course are two-fold. The first is to equip the student with the practical skills and knowledge of surveying so that he can earn his living in industry. The second is to prepare him to write the professional examinations of the Alberta Land Surveyors' Association or the Dominion Land Surveyors' Association. The latter step is necessary for professional standing as a land surveyor.

The first objective is attained by an extensive field course in surveying, using modern instruments and amplified by a thorough study of the theory of surveying. All typical engineering survey problems are worked out under field conditions and computed and recorded in the drafting room.

Intensive courses in mathematics, photogrammetry, physics, geology and astronomy, in which the curricula are those of the Alberta and Dominion Land Surveyor's programmes, are included. These prepare the student to write the professional examinations of these organizations. Successful completion of these examinations and a three-year period of articles will give the candidate professional status.

Employment opportunities are widely varied. Surveyors, consulting engineers, the oil exploration industry, gas and oil pipe lines, government highways departments and civic engineering departments, and federal government branches such as hydrographic and legal, are among those that offer employment to graduates.

Graduates of this course are eligible for membership in the Alberta Society of Engineering Technologists after two years of suitable industrial experience.

Admission prerequisites and enrolment regulations are given on pages 16, and 22. A statement of high school results, or other documentary proof, must accompany each application.



SURVEYING TECHNOLOGY

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

FIRST YEAR

Subject	Unit	Hours
Survey Drafting	SVT-100	120
Field Work	SVT-101	180
Survey Theory	SVT-102	120
Photogrammetry	SVT-103	90
Mathematics	MATH-111	180
Physics	PHYS-111	120
English	ENGL-101	90
Total		900

SVT-100

SURVEY DRAFTING

120 Hours

Introduction; use and care of instruments; geometric constructions; lettering; elements of sketching; multiview projection; auxiliary views; dimensioning; sections and conventions; axonometric projections; development of surfaces; reproduction of drawings; introduction to drawing in ink; history of mapping; design and use of topographic symbols; contours and relief; profiles and mass diagrams; systems of subdivision of Canada Lands; methods of plotting field problems; proper design and location of titles, scales, legends, and marginal information; introduction to map projections.

SVT-101

FIELD WORK

180 Hours

Instruments for measuring lines and determining distances; instruments for measuring angles and determining directions; instruments for measuring elevations and determining altitudes; measuring angles and determining distances and altitudes using the plane table and alidade; route surveys and earthworks; calculations relating to traverses.

SVT-102

SURVEY THEORY

120 Hours

Introduction to surveying; measurement of distances; errors; measurement of angles; direction of a line; traverse surveys; traverse computations; leveling; horizontal and vertical curves; stadia; plane table; topographic surveys; earthworks; adjustments of instruments; methods of keeping notes; property law.

SVT-103

PHOTOGRAMMETRY

90 Hours

A basic aerial photo interpretation course of interest primarily to surveyors and topographical draftsmen. The course includes: introduction to photogrammetry; basic photography; aerial photos; air cameras; types and values of air photos; properties of vertical photos; flight planning for vertical photography; plotting of aerial photos; measurements on, determination of scale of, aerial photos; sketch mapping from aerial photos; simple methods of plotting aerial photo information; principle of stereovision and the use of the stereoscope; floating line intervisibility; determination of heights from aerial photos; characteristics of contour and form lines; elements of aerial photo reading; interpretation of terrain; interpretation of vegetation; road and route reconnaissance; radial line plotting; aerial photo titling; photo handling, report writing, air photo library; properties of oblique photos; gridding of oblique photos, mosaics, their use and methods of construction. Practical work covers areas studied in theory. Equipment used — folding type lens pocket stereoscope, mirror type stereoscope, parallax bar, proportional dividers, scales; major equipment and some photographs supplied by the Institute; notes and photos costing about \$5.00 to be supplied by student.

MATH-111

MATHEMATICS

180 Hours

Standard notation; slide rule; logarithms; 7-place tables; simple equations; simultaneous equations; factoring; remainder and factor theorems; algebraic fractions; quadratic equations; simultaneous quadratics; surds, variations; series, progressions; partial fractions; permutations and combinations; binomial theorem; congruency of triangles, parallel lines, parallelograms, geometrical constructions; loci; angles, arcs, chords; concyclic points; secants, tangents; areas of rectangles, triangles, parallelograms, rhombus, trapezoid, polygons, circle sectors, segments; ellipse; parabola; hyperbola; prism; cylinder; cone; frusta; sphere; trapezoid rule, mid-ordinate rule; Simpson's rule; trigonometric ratios; 7-place tables; solution of right triangles; identities; sine, cosine and tangent laws; addition formulae; factoring formulae; solution of oblique triangles; areas of triangles; inverse functions; analytic geometry of straight line, circle and conics; vectors.

PHYS-111

PHYSICS

120 Hours

Mechanics: Fundamental concepts, forces and equilibrium, motion, force and motion, work and energy, circular and harmonic motion, fluids at rest, properties of matter.

Heat: Temperature, heat and work, kinetic theory of matter, change of phase.

Optics: Wave motion, light and measurement, reflection and refraction, lenses and mirrors, optical instruments, interference and diffraction, polarized light.

Electricity: Electrostatics, D.C. circuits, magnetism, electromagnetic effects, electromagnetic induction, magnetic properties; electromagnetic waves.

ENGL-100

ENGLISH

90 Hours

This course is designed to improve the student's ability to write and speak clearly, concisely, and effectively. It includes a detailed study and practice of technical writing principles and styles; special techniques of technical writing; types and forms of formal and informal reports; business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

SECOND YEAR

Subject	Unit	Hours
Survey Drafting	SVT-200	90
Field Work	SVT-201	270
Survey Theory	SVT-202	90
Astronomy	SVT-205	60
Geology	PT-207	30
Mathematics	MATH-211	240
Physics	PHYS-211	60
English	ENGL-201	60
Total		900

SVT-200 SURVEY DRAFTING 90 Hours

Continuation of work outlined in SVT-100. Descriptive geometry; study of orthographic drawing; fundamental auxiliary views; point line — plane problems; problems applied to mine surveying, to dip strike and bore hole problems; geological and mining applications.

Plot of preliminary and location plans of highways; calculation of earth quantities; profiles; mass diagram; making of mine plans and topographical plans; continuation of instructions regarding preparation and filing of legal plans of survey; drawing of legal plans for registration; map projections.

SVT-201 FIELD WORK 270 Hours

Cleaning and adjustment of instruments; location, construction and preparation for registration of a road or a highway survey; hydrographical surveying and flow measurement; mine surveying; stellar and solar observations for azimuth, time, latitude and longitude, triangulation and base line measurement; re-establishment of quarter and section corners by the mechanical method; survey of a section or quarter section into legal subdivisions and the location of well-sites; visits to Land Titles Office, topographical surveying.

SVT-202 SURVEY THEORY 90 Hours

Curves, spirals and computations; hydrographical surveying and flow measurement; systems of Subdivision of Canada Lands and Boundary Monumentation; Alberta Land Surveys Act; mine surveying; topographical surveying; triangulation; land surveying, rural and urban, reading plans; descriptions of land.

SVT-205 ASTRONOMY 60 Hours

Introduction to practical astronomy; the celestial sphere; the astronomical triangle; measurement of time; the ephemeris and Nautical-Almanac; corrections to observations taken from the earth; instruments used in observations; star identification; observations for latitude; observations for time and longitude; observations for azimuth.

PT-207 GEOLOGY 30 Hours

Elementary study of the following: prairie and forest flora of Western Canada, including general distribution and characteristics of native trees; soil types and distribution in Western Canada; geology and mineralogy, including the study of minerals and rocks, dynamic geology, structural geology, historical geology, general principles.

MATH-211 MATHEMATICS 240 Hours

Plane and solid Euclidean geometry; spherical trigonometry, logarithmic solution of all cases of spherical triangles, area of spherical triangles and other figures; navigation problems.

Analytic geometry of the straight line and the conics; differentiation and integration of algebraic functions, trigonometric functions, inverse trigonometric functions, exponential and logarithmic functions; derivative of arc, curvature; the differential; the definite integral; applied problems.

PHYS-211 PHYSICS 60 Hours

Electricity: electrostatics, capacitors and charges, dc circuit, magnetism, electromagnetic effects, electromagnetic induction, magnetic properties of matter, ac circuits, electromagnetic waves. Optics: light and its measurement, reflection and refraction, lenses and mirrors, optical instruments, interference and diffraction, polarization.

ENGL-201 ENGLISH 60 Hours

This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal technical reports. It also includes a study of the mass media, and a study and application of the principles of public speaking; types of formal and informal speeches; and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluations.

Electrical Department

D. GARDNER, DEPARTMENT HEAD

AIR CONDITIONING AND REFRIGERATION TECHNOLOGY ELECTRICAL TECHNOLOGY

AIR CONDITIONING AND REFRIGERATION TECHNOLOGY

The objective of this course is to provide trained technicians for the refrigeration and air conditioning industry. Foods and beverages require reliable temperature control in their processing, storage transportation and distribution. Heating, ventilating and cooling the homes we live in, the offices and industrial plants we work in, the hospitals, schools, churches, theatres and other institutions, and the cars, trains and planes of today and tomorrow — all these offer continuing challenges to an indispensable industry.

Graduates are presently being employed by mechanical equipment manufacturers and distributors, government departments, consulting engineers and mechanical contractors. Indications are that there will be a continuing demand for technicians in this field, where their assignments are normally in design, service or sales. Course graduates who are interested in obtaining their "Journeyman's Certificate" as refrigeration mechanics, should refer to "Apprentice Credit for Institute Courses" on page 29 of this calendar.

Graduates of this course are eligible for membership in the Alberta Society of Engineering Technologists after two years of suitable industrial experience. Please refer to page 27 of the calendar for further information.

Admission prerequisites and enrolment regulations are given on pages 17 and 22. A statement of high school marks, or other documentary proof, must accompany each application.

NOTE: Those students with a high school diploma and at least a "B" standing in Mathematics 30 or 32, and credit in Physics 30 or 32, may apply to the Registrar for consideration to take a special two-year course.

inductance, mutual inductance and capacitance; series and parallel a-c circuits; power in a-c systems, power factors; introduction to transformers and electrical measuring instruments.

EN-132 ELECTRONICS 65 Hours

Resistor and capacitor codes: names, functions and symbols for industrial electronic tubes; characteristics of diode, triode and multi-element vacuum tubes; special industrial tubes such as thyratrons, ignitrons, phototubes and cells, X-ray tubes; basic principles of transistors.

MATH-130 MATHEMATICS 135 Hours

Rational numbers; equations and inequalities; quadratic equations with rational roots; irrational numbers; functions; graphs; variations; elements of coordinate geometry; the quadratic function; equations of the second degree and their graphs; the sine and cosine functions; oblique triangles; trigonometric equations and identities; polynomials.

PHYS-130 PHYSICS 135 Hours

Mechanics: velocity and acceleration; uniformly accelerated motion; vector properties of velocity; falling bodies; Newton's laws of motion; projectiles; Newton's law of gravitation; statics; equilibrium; centre of mass; friction; work; energy; power; conservation of energy; momentum; conservation of momentum.

Heat: temperature and expansion; heat capacity; changes of state; refrigeration and gases; heat energy; gas laws; mechanical equivalent of heat.

Electricity: static electricity; Coulomb's law; charges in motion; emf; batteries; Ohm's law; series circuits; parallel circuits. Laboratory experiments are conducted for all major topics.

ENGL-130 ENGLISH 135 Hours

This course is aimed at increasing the student's interest and skill in reading, in understanding literature, and in expressing ideas clearly, accurately and effectively in speech and writing. Appropriate texts and readings will be assigned.

"B" YEAR

Subject	Unit	Hours
Refrigeration Laboratory	ACT-230	120
Refrigeration Theory	ACT-231	120
Air Conditioning Laboratory	ACT-232	120
Air Conditioning Theory	ACT-233	90
Electrical Theory and Laboratory	ET-233	60
Machine Shop	MS-233	60
Drafting	DFTG-233	90
Mathematics	MATH-233	90
Physics	PHYS-233	90
English	ENGL-230	60
Total		900

ACT-230 REFRIGERATION LABORATORY 120 Hours

Care and use of hand tools; fabrication of copper lines; fittings; soldering; silver brazing; gauges; testing and adjustment of system components; design, installation, testing and adjustment of single unit refrigeration systems; use of vacuum pumps, testing and recording instruments; starting and testing procedures; observation of commercial and industrial installations.

ACT-231 REFRIGERATION THEORY 120 Hours

Mechanical refrigeration cycle; pressure and temperature scales and conversions; refrigerants; operating principles of system components; evaporators, evaporator control valves; cycling controls; condensers; compressors, compressor lubrication, compressor calculations; insulation; principles of heat transfer; cooling load calculations; system accessories; principles of installation; single and multiple systems.

ACT-232 AIR CONDITIONING LABORATORY 120 Hours

Exercises and problems pertaining to basic principles of physics as applied to air conditioning; practical problems using psychrometric chart and concerning human comfort; air conditioning processes: ventilation, pre-heating and heating with steam coils, humidification, cooling with refrigerant coils and chilled water coils, evaporative cooling, dehumidification, reheat; air conditioning load analyses; summer, winter; equipment selection; cooling and dehumidifying equipment, heating and humidifying equipment; instruments for measuring air properties.

ACT-233 AIR CONDITIONING THEORY 90 Hours

Review of basic principles of physics pertaining to air conditioning; heat and change of state; heat transfer; psychrometry and the psychrometric chart; conditioned air and human comfort; air conditioning load analyses; summer air conditioning load, winter

air conditioning load; equipment selection; cooling and dehumidifying equipment; heating and humidifying equipment; evaporative cooling.

ET-233 ELECTRICAL THEORY AND LABORATORY 60 Hours

Magnetically - operated refrigeration valves; motor application in refrigeration systems; hermetic starting relays; analysis of refrigeration system circuits; basic control circuit development.

MS-233 MACHINE SHOP 60 Hours

The purposes of this course are to teach proper methods of doing bench work, to enable the technician to perform simple lathe operations, and to teach him safe procedures. Bench work consists of the use of hand tools and measuring instruments, reconditioning hand tools, reaming, drilling and sharpening; running and press fits; threads, fittings, joints and couplings. Theory will cover established standards, shop terminology, and the application of theory to shop projects.

DFTG-233 DRAFTING 90 Hours

Drafting instruments, their care and use; lettering; applied geometry; orthographic projections; dimensions and notes; sections and conventions; technical sketching; reproduction of drawings, pictorial drawing, refrigeration symbols.

MATH-233 MATHEMATICS 90 Hours

Review of MATH-130 with emphasis on slide rule and logarithmic solution of right angle and oblique triangles, sum and difference formulae, multiple angle formulae, identities, circular measure, area of sector and segment.

Analytic solution of linear and second degree simultaneous equations, graphs and charts, reduction of exponential equations to straight line form, the binomial theorem, formula solution and algebraic fractions.

Arithmetic, geometric and harmonic progressions. Simple and compound interest, present value and discounts, instalment buying, bonds, annuities and sinking funds, project financing.

Optional — Introduction to statistics, mean, median, mode, frequency curves, standard deviation, normal curve, probability.

PHYS-233 PHYSICS 90 Hours

Measurement, systems of units. Heat: temperature measurement; thermal expansion; the gas laws; partial pressures; mixing of gases; heat quantities; method of mixtures; change of state; vapor pressure; humidity; heat transfer; conduction; radiation; fluids; liquids at rest; fluids in motion; mechanics; comprehensive review of vectors; velocity and acceleration; force and motion; friction.

ENGL-230 ENGLISH 60 Hours

This course is designed to improve the student's ability to write and speak clearly, concisely, and effectively. It includes a detailed study and practice of technical writing principles and style; special techniques of technical writing; types and formats of formal and informal reports; business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

"C" YEAR

Subject	Unit	Hours
Refrigeration Laboratory	ACT-300	60
Refrigeration Theory	ACT-301	90
Air Conditioning Laboratory	ACT-302	120
Air Conditioning Theory	ACT-303	90
Control Systems Laboratory	ACT-304	60
Control Systems Theory	ACT-305	120
Drafting	DFTG-333	90
Sheet Metal Laboratory	MS-310	30
Welding	W-300	30
Mathematics	MATH-303	60
Physics	PHYS-303	90
English	ENGL-301	60
Total		900

ACT-300 REFRIGERATION LABORATORY 60 Hours

In this practical laboratory course the operating principles and characteristics of refrigeration cycle equipments are demonstrated and the student carries out a series of experiments to verify the theoretical cycle concepts, to familiarize him with typical systems, and to teach him correct procedures of system analysis. A number of tours of industrial and commercial refrigeration systems are included.

- ACT-301** **REFRIGERATION THEORY** 90 Hours
 This course covers low temperature refrigeration systems and methods of defrosting, absorption, refrigeration principles, and principles of installation, and a study of the Mechanical Refrigeration Code. Mathematical problems in load calculation, line sizing and equipment selection and balancing are emphasized.
- ACT-302** **AIR CONDITIONING LABORATORY** 120 Hours
 This is a practical laboratory course, demonstrating the theory covered in Unit ACT-303. The major portion of the time is spent in completing approximately twenty experiments, involving air conditioning principles. During this period, familiarization with all equipment and measuring instruments available in the laboratory is emphasized. Near the end of the term, students are taken on a number of field trips, where they survey air conditioning systems both under construction and completely operable.
- ACT-303** **AIR CONDITIONING THEORY** 90 Hours
 This course covers basic air conditioning and heating principles. The theory is closely allied with the laboratory work in unit ACT-302 and follows directly from "B" year Unit ACT-233.
 Mathematical exercises are emphasized to study hot water and steam heating systems and equipment, sizing, layout and balancing of air distribution systems, fans and blowers, and the application of refrigeration equipment to air conditioning systems.
- ACT-304** **CONTROL SYSTEMS LABORATORY** 60 Hours
 Electrical control units: bimetal elements and thermo couples, room thermostats, humidity controllers, temperature controllers, relays, motors, valves; pneumatic control units: room thermostats, humidity controllers, temperature controllers, valves, damper operators; control applications; ventilation, heating, preheating, humidification, cooling, dehumidification; control systems; interconnection of control system with mechanical portion of project; basic trouble-shooting; tours of industrial plants.
- ACT-305** **CONTROL SYSTEMS THEORY** 120 Hours
 Fundamentals of control; definitions; fundamentals of measurement; electric control circuits; electric control units; electronic control circuits; electronic control units; pneumatic control circuits; pneumatic control units; control of residential heating; control of residential air conditioning; zone control — commercial heating; control of unit heaters and unit ventilators; control of commercial central fan heating systems; control of central fan cooling systems; control of peripheral air conditioning units.
- DFTG-333** **DRAFTING** 90 Hours
 Review of drafting theory and skills; developments and intersections; piping drawing; reading architectural drawings; construction of mechanical drawings; taking off materials list from a drawing; study of liquid piping and duct-work layouts; study of working drawings.
- MS-310** **SHEET METAL LABORATORY** 30 Hours
 Demonstrations of hand tools; machine demonstrations — lock former, pan, brake, etc.; layout — allowances, surfaces, surface development; parallel, radial, triangulation; soldering; seams and edges; notches; duct sections with various seams; fastening devices and tools; dampers, grilles, diffusers; types, construction, aspect ratios, radius ratios, turn tables.
- W-300** **WELDING** 30 Hours
 Safety; gas welding; oxy-acetylene equipment; operation; welds; cutting; stud removal, brazing; low temperature brazing, arc welding; elementary electricity applied to welding; techniques; use of inert gases in brazing copper lines; special hazards in welding on refrigeration systems.
 Emphasis is placed on knowledge of technical requirements rather than on developing a high degree of skill.
- PHYS-303** **PHYSICS** 60 Hours
 Mechanics: work; power; energy; torque; fluid mechanics: review and extension of previous year's fluids in motion; Bernoulli's theorem; orifice problems; thermodynamics: gas laws; work in gas processes; laws of thermodynamics; entropy; carnot cycles; vapor compression refrigeration.
- MATH-303** **MATHEMATICS** 60 Hours
 Review of MATH-233; geometry and mensuration including sonic sections; similar and irregular figures; business mathematics including simple and compound interest, present value, discount, installment buying; intuitive calculus including the elements of both differentiation and integration.
- ENGL-301** **ENGLISH** 90 Hours
 This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal technical reports. It also includes a study of the mass media, and a study and application of the principles of public speaking; types of formal and informal speeches; and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluation.

Electrical Technology

The electric power industry is one of Canada's most dynamic growth industries, offering unlimited opportunity to the electrical technician. Moreover, salaries have kept pace with demands. For example, starting salaries have risen from an average of \$315 per month in 1964 to \$383 in 1966. It is anticipated that the average rate will be slightly above \$400 per month in 1967.

From coast to coast colossal sums are being spent to develop new sources of electric power. Multi-million dollar hydro-electric projects are under construction in British Columbia, Alberta, and Manitoba. In Newfoundland the world's largest project is just getting started at Churchill Falls where millions of horsepower will be generated. Ontario is developing very large atomic energy plants and Hydro-Quebec has pioneered the world's first 735,000 volt extra-high voltage transmission.

The Electrical Technology course is designed to give the student a broad training that will equip him to take one of many positions that are open in all areas of utility systems and industrial electricity, including industrial electronic controls.

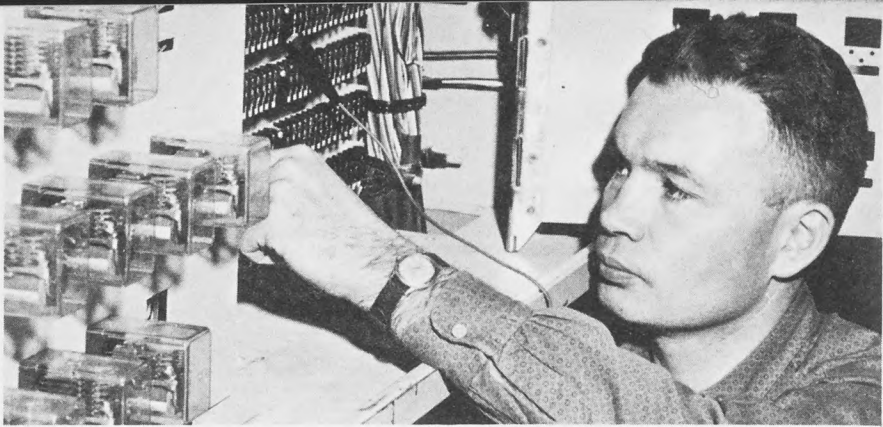
Following are some of the positions that may be filled by power technicians.

POWER GENERATION AND DISTRIBUTION: Instrument and relay technician, Engineering assistant, System control centre operator, Construction supervisor, Technical operator.

MANUFACTURING: Research assistant, Apparatus service representative, Electrical apparatus salesman, Manufacturing engineering analyst, Factory testing analyst, Engineering assistant, Specialist, process computers.

INDUSTRIAL: Electrical draftsman - designer, Engineering assistant, Electrical apparatus serviceman.

Admission prerequisites and enrolment regulations are given on pages 16, 17 and 22. A statement of high school results or other documentary proof, must accompany each application.



ELECTRICAL TECHNOLOGY

Three-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

This course is designed as a continuation of the Alberta Vocational High School program. Students taking the appropriate vocational program will be expected to complete Grade XII and enter "B" year. Others may apply to enter "A" year after completion of an appropriate Grade XI program.

"A" YEAR (common with "A" Year in Refrigeration):

Subject	Unit	Hours
Electrical Laboratory	ET-130	400
Electrical Theory	ET-131	230
Electronics	ET-132	65
Mathematics	MATH-130	135
Physics	PHYS-130	135
English	ENGL-130	135
Total		1100

ET-130 ELECTRICAL LABORATORY 430 Hours

Care and use of tools; wire splicing and soldering; care and use of meters; basic d-c circuitry; low-voltage signal circuits; d-c generators, including regulation, switch-board operation, armature connections and testing; d-c motors and controls, including general maintenance and repairs; belts and pulleys for motor drives; small transformer winding and introduction to single-phase motor rewinding; a-c experiments to study characteristics of inductances, capacitors and resistances in various circuits combinations; electronic experiments related to the electronic theory in ET-132.

ET-131 ELECTRICAL THEORY 200 Hours

Nature of electricity, including electron theory of matter and static and dynamic electricity; electrical units and their derivation; work, energy and power; torque and its measurement; series and parallel circuits and introduction to the Edison three-wire system; magnets, magnetism and magnetic circuits; d-c rotating machines; electrical instruments and measurements; a-c theory, including the sine wave, e , E_m , E , etc.; inductance, mutual inductance and capacitance; series and parallel a-c circuits; power in a-c systems, power factor; introduction to transformers and electrical measuring instruments.

ET-132 ELECTRONICS 65 Hours

Resistor and capacitor codes; names, functions and symbols for industrial electronic tubes; characteristics of diode, triode and multi-element vacuum tubes; special industrial tubes such as thyratons, ignitrons, phototubes and cells, X-ray tubes; basic principles of transistors.

MATH-130 MATHEMATICS 135 Hours

Rational numbers; equations and inequalities; quadratic equations with rational roots; irrational numbers; functions; graphs; variations; elements of coordinate geometry; the quadratic function; equations of the second degree and their graphs; the sine and cosine functions; oblique triangles; trigonometric equations and identities; polynomials.

PHYS-130 PHYSICS 135 Hours

Mechanics: velocity and acceleration; uniformly accelerated motion; vector properties of velocity; falling bodies; Newton's laws of motion; projectiles; Newton's law of

gravitation; statics; equilibrium; center of mass; friction; work; energy; power; conservation of energy; momentum; conservation of momentum.

Heat: temperature and expansion; heat capacity; changes of state; refrigeration and geysers; heat energy; gas laws; mechanical equivalent of heat.

Electricity: static electricity; Coulomb's law; charges in motion; emf; batteries; Ohm's law; series circuits; parallel circuits. Laboratory experiments are conducted for all major topics.

"B" YEAR

Subject	Unit	Hours
Electrical Laboratory	ET-230	300
Electrical Theory	ET-231	150
Industrial Control Electronics	ET-232	90
Safety Regulations and Standards	ET-234	60
Mathematics	MATH-232	90
Applied Mathematics	MATH-238	90
Physics	PHYS-232	60
English	ENGL-230	60
Total		900

ET-230 ELECTRICAL LABORATORY 330 Hours

Review of fundamentals of single-phase a-c circuits involving R, X_L, X_C, and power with some expansion of work done in previous year; review of d-c generators and motors; parallel operation of shunt and compound generators; magnetic switches and their control circuits; fundamentals of heating controls and control systems; lighting, principles, fluorescent-lighting units and mercury-vapor units; single-phase motors; transformers, ratios, single-phase and three-phase connections and induction voltage regulators; three-phase motors and three-phase motor starters and controllers; alternators and synchronous motors; parallel operation of alternators, manual starting of synchronous motors; industrial electronics; fundamental experiments, practice in the use of related instruments and familiarity with electronic circuit components; metering: single-phase and three-phase power and use of transfer switches.

ET-231 ELECTRICAL THEORY 150 Hours

Brief review of d-c machines, including electric circuits and characteristics of shunt, series and compound machines. Parallel operation of d-c generators; review and continuation of basic a-c theory, including power factor and power factor improvement, series and parallel resonance; polyphase circuits, including vector representation of voltages and currents, star and delta connections, metering power; single and three-phase transformers; automatic voltage regulators; single and three-phase motors; synchronous generators; instruments and instrument transformers; rectifiers.

ET-232 INDUSTRIAL CONTROL ELECTRONICS 90 Hours

Review of fundamentals covered in ET-132; description and uses for cathode-ray oscilloscope and V.T.V.M.; power rectifiers and filters; thyatron control; transistors; basic amplifiers and oscillators; time constants; photoelectric devices; electronic timers.

ET-234 SAFETY REGULATIONS AND STANDARDS 60 Hours

The need for safety regulations and standards; the scope and jurisdiction of the Electrical Protection Act, municipal by-laws and the Canadian Electrical Code; familiarization with the C.E.C.; especially sections 0, 2, 4, 8, 10, 12, 14, 16, 26 and 28.

Development of a project involving a typical industrial motor installation in which the applicable rules are carefully observed; safe working practices and habits.

MATH-232 MATHEMATICS 90 Hours

Review of MATH-130 with emphasis on significant figures, logarithms, ratio, proportion, variation, linear and quadratic equations, basic trigonometry; simultaneous equations with determinants; vector algebra; sequences and series; binomial theorem; analytical trigonometry; logarithmic solution of triangles; analytic geometry and conic sections.

MATH-238 APPLIED MATHEMATICS 90 Hours

Alternating current; reactance; impedance; power in alternating current circuits; impedance networks; resonance; three-phase systems; transformers; polyphase induction motors; single-phase motors; synchronous motors; converters and rectifiers; alternating current generators.

PHYS-232 PHYSICS 60 Hours

Mechanics: review of momentum, introduction to circular motion.

Light: classical picture of light waves; the electromagnetic spectrum; sources and spectra; blackbody radiation; Rayleigh-Jeans dilemma.

Modern Physics: Planck's hypothesis; Bohr's atom; atomic energy levels; the photon; Compton scattering; de Broglie waves; dual wave-particle properties of matter and

60 Hours

300 Hours

120 Hours

90 Hours

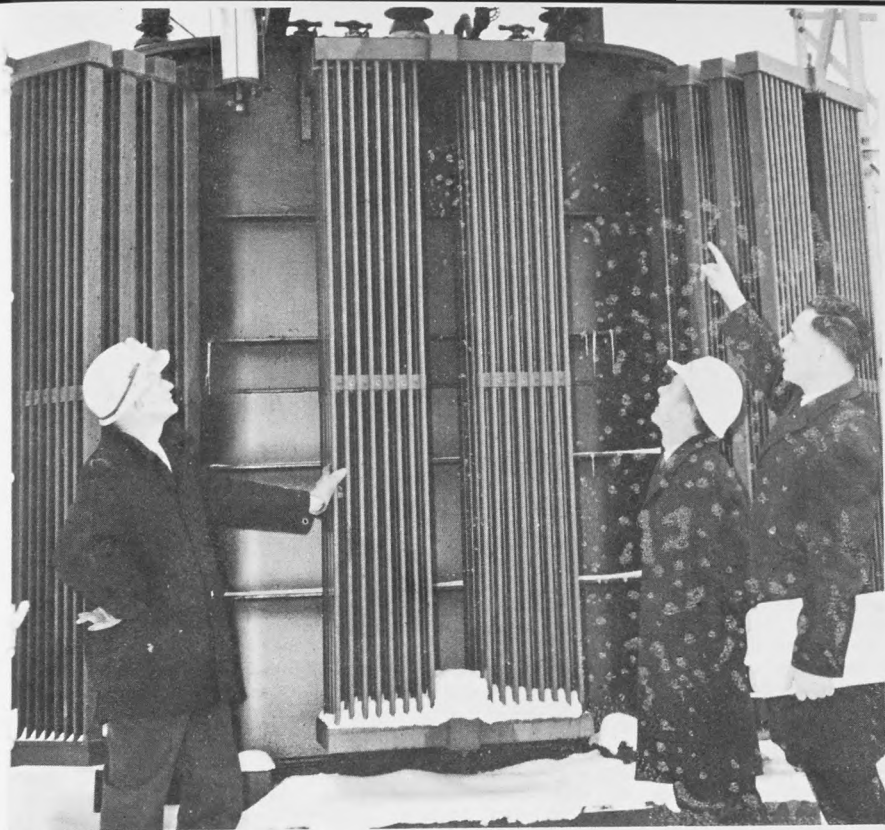
60 Hours

90 Hours

90 Hours

60 Hours

90 Hours



ELECTRICAL TECHNOLOGY

Two-Year Course

This course is available to students who have completed Grade XII or who have 100 Alberta High School credits (with standings as shown on page 16)

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00

FIRST YEAR

Subject	Unit	Hours
Electrical Laboratory	ET-100	360
Electrical Theory	ET-101	150
Safety Regulations and Standards	ET-103	30
Mathematics	MATH-100	120
Physics	PHYS-100	90
Drafting	DFTG-100	90
English	ENGL-101	60
Total		900

ET-100 ELECTRICAL LABORATORY 360 Hours

Care and use of tools; wire splicing and soldering; bell and lighting circuits; circuits for verification of Ohm's Law; the care and use of electrical measuring instruments; d-c armatures; small transformer winding; introduction to single-phase a-c motors; locating faults in d-c starters and controllers; d-c switchboard operation; a-c magnetic switches and control circuits; heating controls; introduction to fluorescent lighting. An introduction to report writing is included with some projects.

ET-101 ELECTRICAL THEORY 150 Hours

Basic ideas and effects; electron theory; electrical units and their derivation; Ohm's law; electrical power and energy; conductor properties and sizes; wiring systems; primary and secondary batteries; application to Kirchoff's laws to emf and resistance networks; magnets, magnetism and the magnetic circuit; electrical measuring instruments; principles and characteristics of d-c generators and d-c motors.

Alternating voltages and currents; maximum, effective and average values; frequency; phase; application of vectors to a-c conditions; inductance, self and mutual; the induction coil; inductive reactance; impedance.

ET-103 SAFETY REGULATIONS AND STANDARDS 30 Hours

The need for safety regulations and standards: the various Acts and how they apply to the industry.

Minimum standards for equipment and installations as set forth in sections 0, 2, 4, 12 and 16 of the Canadian Electrical Code; safe working practices.

The instruction is supplemented by lectures and demonstrations from competent persons from industry and from the Workmen's Compensation Board.

DFTG-100 DRAFTING 90 Hours

Choice of instruments: use of instruments; applied geometry; theory of projection drawing; orthographic projection and axonometric; sections; conventional practices; lettering dimensions and notes; oblique projection—cavalier, cabinet, other obliques.

Electrical circuit diagrams; blueprint reading; practical electrical problems; reproduction of drawings.

MATH-100 MATHEMATICS 120 Hours

Use of slide rule; elementary trigonometry; electrical problems involving Ohm's law, series and parallel circuits, mechanical work and power, electrical power and energy; generators and motors; Kirchhoff's laws; ratio and proportion; brake tests and efficiency of machines.

Use of the slide rule; logarithms; elementary algebra; elementary trigonometry; vectors; complex numbers; Ohm's law; series and parallel circuits; mechanical work and power; electrical power and energy; conductors; generators and motors; battery problems; Kirchhoff's laws; meters and bridge circuits; efficiencies of motors and generators.

PHYS-100 PHYSICS 90 Hours

Measurement: liquids at rest; properties of gases; temperature measurement, thermal expansion; heat quantities; heat transfer; vectors, forces at a point; velocity and acceleration; force and motion; friction; work and power; energy; torque; elastic properties of solids.

ENGL-101 ENGLISH 60 Hours

This course is designed to improve the students' critical thinking as well as their writing and reading skills. The course begins with instruction on how to study. It demonstrates how elementary logic, fundamental writing techniques, outlining, summarizing, paragraphing, vocabulary, grammar, spelling, capitalization, punctuation, are applied to the writing of short, informal library research reports, business correspondence, and technical explanations. It also includes critical evaluations of the structure and content of published writings, especially in science and technology.

SECOND YEAR

Subject	Unit	Hours
Electrical Laboratory	ET-200	330
Electrical Theory	ET-201	150
Safety Regulations and Standards	ET-203	30
Electronics	EN-210	60
Mathematics	MATH-200	150
Physics	PHYS-200	90
English	ENGL-200	90
Total		900

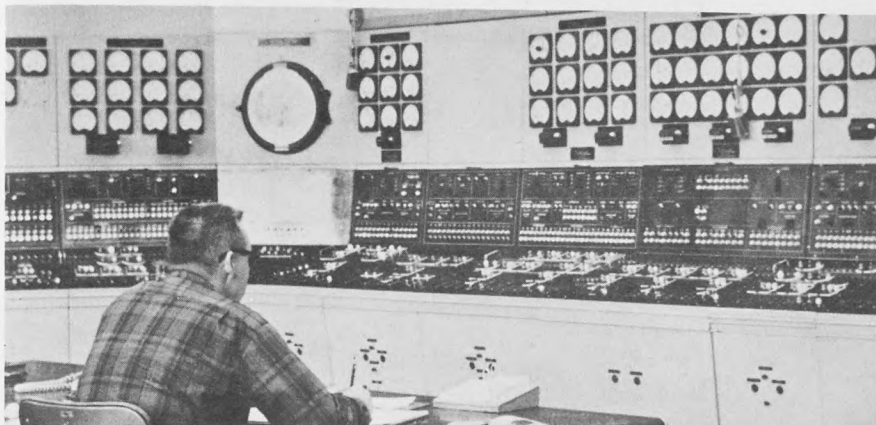
ET-200 ELECTRICAL LABORATORY 330 Hours

Operating principles and characteristics of the following equipment are studied: alternators, switchboard equipment, transmission lines, transformers, air and oil circuit breakers, feeder voltage regulators, meters, protective relays, three-phase and single-phase motors and their controls, heating controls, industrial electronic control equipment, lighting equipment. Knowledge is gained by performing tests and writing reports.

ET-201 ELECTRICAL THEORY 150 Hours

Continuation of basic a-c theory, including power factor and power factor improvement. Three-phase theory as applied to synchronous generators, transformers, motors, transmission systems and loads.

Theory and operation of electrical machines and equipment; transformers; automatic voltage regulators; single- and three-phase motors; synchronous generators; instruments and instrument transformers; rectifiers magnetic and rotary amplifiers as used in industry.



ET-203 SAFETY REGULATIONS AND STANDARDS 30 Hours

The Electrical Protection Act and its jurisdiction and scope in the electrical industry, with special reference to areas which do not come under the Canadian Electrical Code, Part I.

Reference is made to the following, from the point of view of both the F.P.A. and the C.E.C.: Grounding, Protection and Control. Installation of Electrical Equipment and Installation of Motors.

Students are required to develop a project involving a typical industrial motor installation in which the various rules are carefully observed.

The safety program of E-103 is repeated, plus instruction on resuscitation from electric shock, safety rules and safe practices.

EN-214 ELECTRONICS 60 Hours

Familiarization with inductors, capacitors and resistors as used in electronics; principles of diode, triode and multi-element vacuum tubes; special industrial tubes such as thyatron, ignitrons, photocells, X-ray tubes; basic principles of transistors.

Operation of basic electronic circuits such as: rectifiers, amplifiers, oscillators, photo-electric relays, thyatron control, etc.

Methods for testing electronic components and circuits.

Instruction is given partly by lectures and demonstrations and partly by laboratory experiments performed by the student.

MATH-200 MATHEMATICS 150 Hours

Review of common logarithms; natural logarithms; exponential and logarithmic equations; functions, function notation, derivative notation; general methods of differentiation; derivatives of transcendental functions; applications of differentiation; integration of algebraic and transcendental functions; definite integrals; applications of integration; alternating current, single-phase a-c circuits; polyphase systems; the polyphase induction motor; single-phase motors; synchronous motors and converters; synchronous generators.

PHYS-200 PHYSICS 90 Hours

Mechanics: linear momentum and impulse; uniform circular motion; rigid bodies; angular motion, momentum and gyroscopic motion, simple harmonic motion, wave motion, sound, ultra-sonic applications.

ENGL-200 ENGLISH 90 Hours

This is an intensive course which aims to improve students' critical faculties as well as their writing, speaking, and reading skills. The course begins with a review of library research reports, business correspondence, and technical explanations. It includes study of the larger elements of report writing, methods of gathering report data, formal and informal report formats, and the uses of different types of reports — with emphasis on the formal technical report. It also includes a study of the organization and delivery of short speeches (including technical talks) and the conduct of business meetings. The structure and content of published writings, mostly in science and technology, are analyzed and evaluated. Selected readings are also assigned for book reports and class discussions.

TOOLS, TEXTBOOKS, DRAFTING INSTRUMENTS, ETC.: The cost of tools, books and other supplies should not exceed \$75 for the first year and \$40 for the second year. Students are advised not to purchase any of these supplies until they have met their instructors.

Electronics Department

K. M. WATT, DEPARTMENT HEAD

ELECTRONIC TECHNOLOGY

TELECOMMUNICATION TECHNOLOGY

Electronic Technology (2 year program)
Terminating in 1967-68 Academic Year

ELECTRONIC TECHNOLOGY

This course is designed to provide engineering technicians of high calibre to work in the design, research, production, maintenance, or installation phases of the electronic industry. Graduates of the course have been employed in research and engineering departments of government and industry, with utility companies, in radio and television broadcasting and in the oil industry.

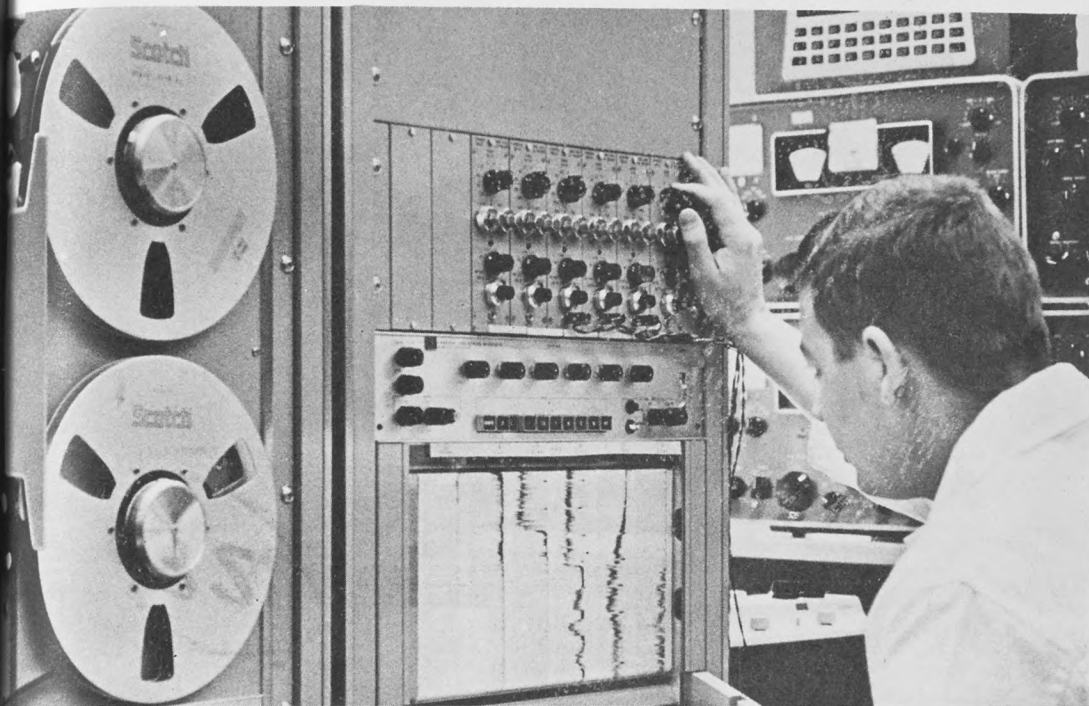
The Institute is well supplied with laboratory space and modern equipment. Electronic equipment ranges from simple meters to complete transmitting, industrial electronic, and radar systems. The course is intensive and consistent hard work is necessary for successful graduation.

Each year of the course is divided into three terms. Many of the course subjects are complete at the end of the term and examinations given at that time are final. Term dates are given in the Calendar on pages 10, 11 and 12.

Graduates of this course are eligible for membership in the Alberta Society of Engineering Technologists after two years of suitable industrial experience. Please refer to page 27 of this calendar for further information.

Students registered in this course are eligible for Student Association membership in the Institute of Electrical and Electronic Engineers. This privilege was granted after examination of course content, equipment and facilities, staff qualifications, and the type of positions obtained by graduates.

Admission prerequisites and enrolment regulations are given on pages 17, and 22. A statement of high school results, or other documentary proof, must accompany each application.



ELECTRONIC TECHNOLOGY

Three-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

"A" YEAR

Subject

	Unit	1st	Term 2nd	3rd	Total Hours
Electronic Theory	ENT-130	170	—	—	170
Electricity Laboratory	ENT-131	130	—	—	130
Circuit Theory I	ENT-132	—	80	50	130
Electronic Laboratory I	ENT-133	—	105	—	105
Instrumentation I	ENT-134	—	—	40	40
Electronic Laboratory II	ENT-135	—	—	120	120
Mathematics	MATH-130	60	35	40	135
Physics	PHYS-130	60	35	40	135
English	ENGL-130	60	35	40	135

Total 1,100

ENT-130 ELECTRONIC THEORY I 170 Hours

Fundamental electrical concepts; electrical and radio symbols; Ohm's Law; Kirchoff's laws; power and energy; magnetism; b.h. curves, hysteresis, permeability; inductance and inductive reactance; capacitance and capacitive reactance; a-c theory; shielding; series and parallel resonance; properties and uses of series and parallel resonant circuits; elements of combined circuits of L, C and R; time constants; fundamental filter networks; vacuum tubes; transistors.

ENT-131 ELECTRICITY LABORATORY 130 Hours

A series of experiments are carried out to aid in familiarization with Ohm's Law in series and parallel circuits; Kirchoff's law; voltage divider circuits; uses of multipliers



and shunts in meter circuits; ohmmeters; multimeters; characteristics of inductances, capacitors and resistances in various circuit combinations; transformer characteristics.

Familiarization is also obtained with radio hardware, proper soldering techniques and the use of proper tools.

Answers to questions must be submitted on all experiments performed. Mathematical problems, based on some of the experiments, are also solved.

ENT-132 CIRCUIT THEORY I 130 Hours

The t-r-f receiver; the a-m superheterodyne receiver; power supplies, r-f amplifiers, mixers, a-m detectors, audio amplifiers, employing both tubes and transistors.

Detailed theory of the push-pull amplifier, grounded grid amplifiers, cathode followers; special problems in ac-dc receivers, portable receivers, automobile receivers, etc.; stage by stage analysis of source of trouble in vacuum tube and transistor receivers; causes of component failure; remedial measures; receiver alignment; tuning indicators, automatic tuning system, voltage doublers; communication receivers and their special features and characteristics, FM Superheterodyne.

ENT-133 ELECTRONICS LABORATORY I 105 Hours

A series of experiments are carried out to aid in familiarization with diode and triode vacuum tube characteristics; triodes a-c and d-c amplifiers; vacuum tubes and selenium rectifier power supply characteristics; the voltage doubler; Class A amplifier characteristics; power amplifiers; the loudspeaker; phase inverters; the push-pull power amplifier; amplifier frequency characteristics; detectors; converters; vacuum tube oscillators; familiarization with basic transistor circuits.

Familiarization is also obtained with the use of test equipment such as tube and transistor testers, signal generators, oscilloscopes, vacuum tube voltmeters, etc. Chassis layout and lead dress problems also become familiar.

Answers to questions must be submitted on all experiments performed.

ENT-134 INSTRUMENTATION I 40 Hours

Discussion of basic meter movements and their application to measurements of current, voltage, and resistance. Theoretical details of multimeters, vacuum tube voltmeters, tube and transistor testers. The principles of the cathode ray tube and the cathode ray oscilloscope.

ENT-135 ELECTRONICS LAB II 120 Hours

A series of experiments using a variety of test equipment to develop systematic techniques for locating and correcting faults in all stages of the superheterodyne receiver; the experiments are designed to make the technique applicable to other electronic equipment; maintenance procedures with transistor circuits; experience with automobile receivers, communication receivers and transistorized receivers.

MATH-130 MATHEMATICS 135 Hours

Rational numbers; equations and inequalities; quadratic equations with rational roots; irrational numbers; functions; graphs; variations; elements of coordinate geometry; the quadratic function; equations of the second degree and their graphs; the sine and cosine functions; oblique triangles; trigonometric equations and identities; polynomials.

PHYS-130 PHYSICS 135 Hours

Mechanics; velocity and acceleration; uniformly accelerated motion; vector properties of velocity; falling bodies; Newton's laws of motion; projectiles; Newton's law of gravitation; statics; equilibrium; centre of mass; friction; work; energy; power; conservation of energy; momentum; conservation of momentum.

Heat: temperature and expansion; heat capacity; changes of state; refrigeration and geysers; heat energy and gas laws; mechanical equivalent of heat.

Electricity: static electricity; Coulomb's law; charges in motion; emf; batteries; Ohm's law; series circuits; parallel circuits. Laboratory experiments are conducted for all major topics.

ENGL-130

ENGLISH

135 Hours

This course is aimed at increasing the student's interest and skill in reading, in understanding literature, and in expressing ideas clearly, accurately and effectively in speech and writing. Appropriate texts and readings will be assigned.

NOTE: 50:30 indicates 50 hours of lecture, 30 hours of lab.

"B" YEAR

Subject	Unit	Term			Total
		1st	2nd	3rd	Hours
Circuit Theory II	ENT-230	80:00	20:30	20:30	120:60
Instrumentation II	ENT-232	40:60	—	—	40:60
Semi-Conductors	ENT-234	30:30	20:30	—	50:60
H. F. Systems	ENT-236	—	40:00	10:30	50:30
Telephone Principles	ENT-238	—	40:00	20:20	60:20
Carrier I	ENT-240	—	—	30:20	30:20
Mathematics	MATH-234	20:00	20:00	20:00	60:00
Applied Mathematics	MATH-239	—	30:00	30:00	60:00
Physics	PHYS-234	20:00	20:00	20:00	60:00
English	ENGL-230	20:00	20:00	20:00	60:00
Drafting	DFTG-234	—	00:30	00:30	00:60
Total					590:310

ENT-230

CIRCUIT THEORY II

180 Hours

As a continuation of Circuit Theory I this subject will provide for a review of basic concepts and then lead to more advanced work with sine and complex waveforms. Emphasis is placed upon techniques and circuitry which the student will encounter in other subjects. Discussion of broadband amplifiers and pulse techniques including non-sine waveform generation and shaping. A self contained section is included which deals with audio system and circuit design.

Laboratory exercises to support the theory are performed by the student.

ENT-232

INSTRUMENTATION II

100 Hours

Analysis of the theory and application of a wide variety of laboratory type electronic instruments including laboratory type oscilloscopes, signal generators, distortion measuring instruments and specialized V.T.U.M.'s. Instruments for use as standards in measurement and calibration techniques for frequency, voltage, current, power, resistance, impedance, capacitance and inductance. General instrumentation for television, communications and industry.

Laboratory experiments to promote familiarization with the application, use and calibration of laboratory instruments discussed in theory.

ENT-234

SEMI-CONDUCTORS

110 Hours

Review and expansion of the fundamental theory of transistors and other solid state devices. Discussion of their application to amplifiers, oscillators, radio and television receivers as well as industrial and computer applications. A section is included on design procedures.

Laboratory exercises are performed by the student in such areas as testing, measuring and interpreting transistor specifications and characteristics. Experiments with various amplifier oscillator, regulator, switching and logic circuits.

ENT-236

H. F. SYSTEMS

80 Hours

General consideration of transmitting and receiving systems in the L.F., M.F., and H.F. parts of the radio spectrum. Transmitting circuits: Oscillators; multipliers; R.F. amplifiers; Keying methods; AM, FM, SSB and FM multiplex modulation; power supplies; control and safety measures; preventative maintenance. Communication receivers and the selection, detection and reproduction of CW, AM, FM, SSB and FM multiplex signals. Electromagnetic waves and propagation; transmission lines; antenna systems. Communication systems and specialized equipment. Laboratory experiments with communication receivers and transmitters are performed to support the theory taught.

ENT-238

TELEPHONE PRINCIPLES

80 Hours

A thorough knowledge of telephone schematic diagram types will be given by using sequence charts for the explanation of the basic relay circuits. Subscriber's equipment such as telephone instruments, paystations and key equipment will be dealt with in detail. An introduction will be made to step-by-step switching by explaining the various systems through block diagrams. The principle of "subscriber interconnection" will be explained by a detailed description of the complete circuit operation of three types of step-by-step connectors.

The laboratory is equipped to allow each student to perform various experiments and assignments individually. By prior assignment, the student will be expected to wire any one of ten relay circuits. He will also be expected to locate a minimum of eight faults on each of the following pieces of equipment: telephone instruments; key equipment; step-by-step connectors. Emphasis will be placed on neat, methodical work habits.

ENT-240 CARRIER I 50 Hours

An historical introduction will be given to explain the need of carrier facilities in modern telephony. A block diagram of a basic general carrier system will be used to explain its principle of operation. The detailed operation of the components in this carrier system will be dealt with, stressing the design of pads and filters. Assignments on each component will be given to allow the student to prepare material for experiments to be performed later. The student will also build an elementary carrier system which he has previously designed.

MATH-234 MATHEMATICS 60 Hours

Review of MATH-130 with emphasis on indices and radicals, logarithms and slide rule, use of tables, linear and quadratic equations, triangle trigonometry; solution of right triangles with slide rule; analytical trigonometry including inverse functions, simultaneous equations with determinants; vectors and phases; complex notation and vector algebra including Euler's theorem.

MATH-239 APPLIED MATHEMATICS 60 Hours

This course will include: problem solving using Ohm's law, Kirchoff's laws, Maxwell's cyclic currents, voltage and current sources in DC and resistive AC circuits; the mathematical approach to vacuum tube and transistor circuits (equivalent circuits, equations, characteristic curves, load lines and operating points); symbolic logic and Boolean algebra; switching circuit applications; logic circuits; machine languages and machine arithmetic.

PHYS-234 PHYSICS 60 Hours

Mechanics: Units, vector quantities, systems of forces, torque and equilibrium, linear motion, force and motion, work and energy, momentum, uniform circular motion and gravitation, rotational motion, elastic properties of matter, harmonic motion, wave motion.

This course is designed to improve the student's ability to write and speak clearly, concisely, and effectively. It includes a detailed study and practice of technical writing principles and style; special techniques of technical writing; types and formats of formal and informal reports; business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

DFTG-234 DRAFTING 60 Hours

Introduction to drafting; instruments and materials; line work and the use of instruments; geometric construction; lettering; orthographic projection; sections and conventions; axonometric projection; oblique projection; dimensioning; reproduction of drawings.

"C" YEAR

Subject	Unit	Term			Total Hours
		1st	2nd	3rd	
English	ENGL-302	30:00	20:00	20:00	70:00
Physics	PHYS-304	20:00	20:00	20:00	60:00
Applied Mathematics	MATH-309	20:00	30:00	30:00	80:00
FORTRAN IV Programming	CT-300	30:00	—	—	30:00
Mathematics	MATH-304	—	20:00	20:00	40:00
Drafting	DFTG-334	30:00	—	—	30:00
Electronic Systems	ENT-300	40:30	40:30	30:30	110:90
Television	ENT-308	40:00	20:30	00:30	60:60
VHF Systems	ENT-306	30:30	—	—	30:30
Microwave	ENT-302	—	30:30	30:30	60:60
Research Project	ENT-304	—	00:30	—	00:30
Data Instrumentation	ENT-310	—	—	30:30	30:30
Total					600:300

ENGL-302 ENGLISH 70 Hours

This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal technical reports. It also includes a study of the

mass media, and a study and application of the principles of public speaking; types of formal and informal speeches; and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluation. A formal technical report will be required

PHYS-304 PHYSICS 60 Hours

Optics: Light and illumination, reflection, refraction and dispersion, lenses, optical instruments, interference and diffraction, polarization, spectra and color. Modern Physics: Relativity, quanta and X-rays, atomic energy levels, waves and particles, molecules and solids, nuclei and nuclear energy, nuclear reactions.

MATH-309 APPLIED MATHEMATICS 80 Hours

This course is intended to develop the student's skill in the use of mathematics to solve practical problems in electronics. Topics include: exponential equations in RL and RC circuits; problems involving Z, R, X, Y, G, B, trigonometry and logs; network theorems; mesh and nodal analysis; network parameters, introduction to calculus with applications.

CT-300 FORTRAN IV PROGRAMMING 30 Hours

Introduction to the symbols and methods used in writing a computer program using the FORTRAN IV Language.

MATH-304 MATHEMATICS 40 Hours

Review of MATH-234; determinants; matrices; probability and statistics and reliability.

DFTG-334 DRAFTING 30 Hours

Electrical and electronic schematic drawing, drawing in ink and reproduction of drawings.

ENT-300 ELECTRONIC SYSTEMS 200 Hours

Theory and application of electronics as used in the industrial and scientific fields. Some of the topics include: industrial instrumentation; logical circuitry; input and output transducers; industrial data acquisitions systems; processing; control and display systems. The electrical and electronic principles and devices required to perform these operations are studied. Suitable laboratory exercises are included to provide working examples of practical systems.

ENT-308 TELEVISION 120 Hours

This course applies the material covered in Circuit Theory II (ENT-230) and HF systems (ENT-236) to the television system. Some topics included are: picture elements; scanning; synchronization and the nature of the composite video signal; the television receiver; picture tubes, video amplifier, clamping circuits, automatic gain control, sync circuits, deflection oscillators, automatic frequency control and output stages; picture IF amplifiers; the RF tuner and power supplies.

Fundamentals of television broadcasting including: cameras, camera controls, sync generators, video tape recorders and film chains.

General theory of color television systems including color picture tubes and details of the color receiver.

Laboratory exercises will include work with monochrome and color receivers as well as some television broadcast equipment and the use of monochrome and color television test equipment and procedures.

ENT-306 V.H.F. SYSTEMS 60 Hours

Detailed treatment of VHF Communications systems including: transmission lines; antennae; propagation; VHF transmitter circuits; VHF receiver circuits; maintenance procedures and specialized equipment.

Laboratory experiments will be performed by the students to support the theory taught and to gain experience in maintenance procedures.

ENT-302 MICROWAVE 120 Hours

General treatment of microwave principles including: Smith Charts; wave guides and wave guide components; cavity resonators; klystrons; magnetrons; travelling wave tubes; microwave transmitters of both high and low power; microwave receivers and antennae; microwave propagation; detailed treatment of microwave measuring instruments and techniques; introduction to microwave systems.

Laboratory experiments will be performed by the student to support the theory taught.

ENT-304 RESEARCH PROJECT 30 Hours

A period to provide the student with the time and opportunity for access to specialized laboratory equipment which he requires while researching his technical report project.

ENT-310 DATA INSTRUMENTATION 60 Hours

Introduction to digital computer programming, operation and maintenance: input and output devices; signal conditioning for compute; control of closed loop automation systems.

TELECOMMUNICATION TECHNOLOGY

This course is designed to provide engineering technicians of high calibre to work in the production, maintenance or installation phases of the radio, and telecommunication industries.

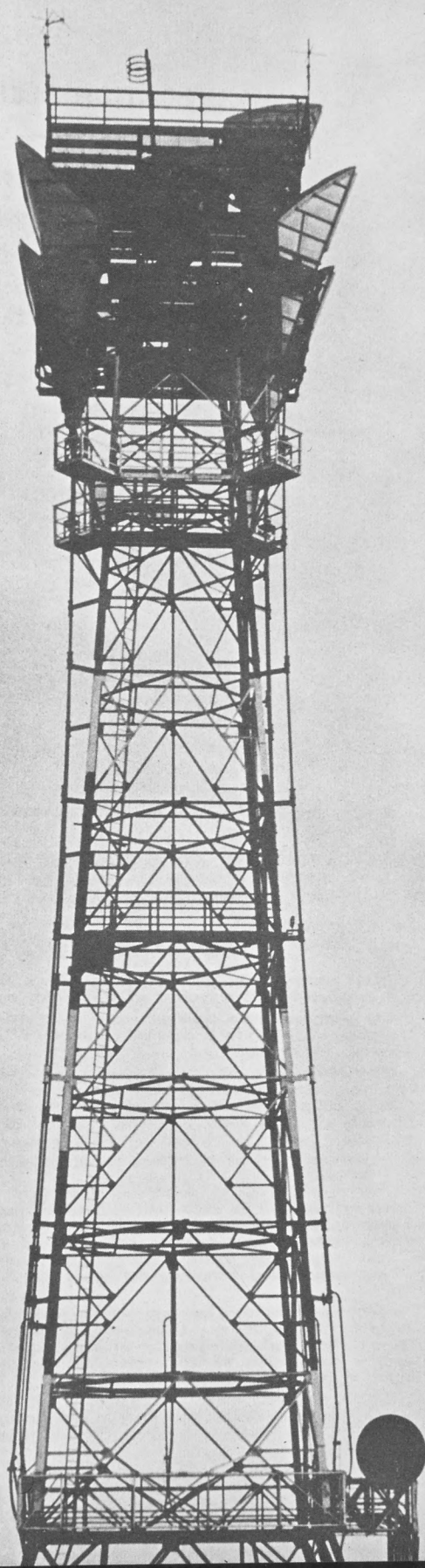
The Institute is well supplied with laboratory space and modern equipment. Electronic equipment ranges from simple meters to complete transmitting, industrial electronic, and radar systems. The course is intensive and consistent hard work is necessary for successful graduation. Requirements for admission are given on pages 17 and 22.

The first and second years are common with Electronic Technology. The third year will emphasize training toward the telecommunications industries.

Each year of the course is divided into three terms. Many of the course subjects are complete at the end of the term and examinations given at that time are final. Term dates are given in the Calendar on pages 10, 11 and 12.

Students registered in this course are eligible for Student Associate Membership in the Institute of Electrical and Electronic Engineers. This privilege was granted after examination of course content, equipment and facilities, staff qualifications, and the types of positions obtained by graduates.

Graduates of this course are eligible for membership in the Alberta Society of Engineering Technologists after two years of suitable industrial experience. Please refer to page 27 of the calendar for further information.



TELECOMMUNICATION TECHNOLOGY

Three-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

The first two years of this course are common with Electronic Technology.

"C" YEAR

Subject	Unit	Term			Total Hours
		1st	2nd	3rd	
Carrier II	TETC-301	60:00	00:60	_____	60:60
VHF Systems	TETC-306	30:30	_____	_____	30:30
Microwave	TETC-303	_____	30:30	50:30	80:60
Switching Systems	TETC-307	60:40	30:20	50:30	140:90
Transmission	TETC-305	_____	60:00	00:30	60:30
Systems Laboratory	TETC-309	_____	_____	00:40	00:40
FORTTRAN Programming	CT-300	30:00	_____	_____	30:00
Mathematics	MATH-304	_____	20:00	20:00	40:00
Applied Mathematics	MATH-309	20:00	30:00	30:00	80:00
Drafting	DFTG-335	00:30	_____	_____	00:30
English	ENGL-301	_____	00:20	00:20	00:40
Total					520:380

ENGL-301	ENGLISH	40 Hours
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This course will emphasize the writing of a technical report for the projects of TET-309 Systems Laboratory.

CT-300	FORTAN IV PROGRAMMING	40 Hours
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The introduction to the symbols and methods used in writing a computer program using the FORTRAN IV language.

MATH-307	MATHEMATICS	40 Hours
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Advanced algebra and calculus suitable to telecommunications applications.

DFTG-335	DRAFTING	30 Hours
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A continuation of DFTG-234 with emphasis on telecommunication symbols and drawings

TET-307	SWITCHING SYSTEMS	240 Hours
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A continuation of step-by-step systems will cover in detail the various types of line-finders, digit absorbing selectors, P.B.X. connectors, repeaters and their inter-connection.

Common control systems will be dealt with in block diagram form which will serve to introduce a detailed circuit operation of a crossbar system.

Toll switching, direct distance dialing and all number identification systems will be covered by switching diagrams and detailed operation of certain individual components that make up these systems.

Computer programming as applied to electronic switching systems will serve to introduce the basic requirements of ESS Interconnection. A continuation of the principles of logic design and other prerequisites taught earlier will be combined to teach the principle of solid state switching to be used in the Tele-Communications Industry.

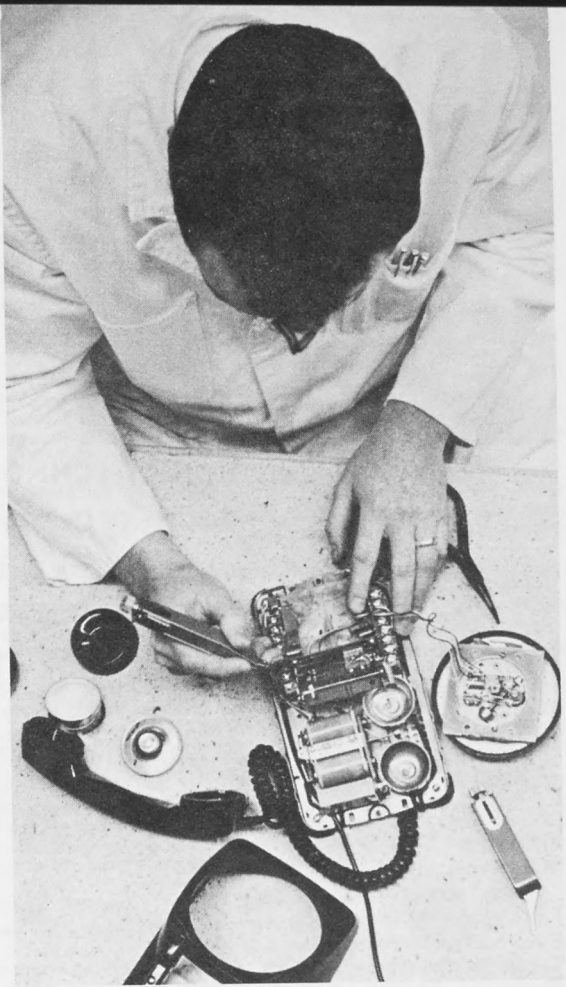
Laboratory experiments will be performed to support the theory taught.

TET-301 CARRIER II 120 Hours

Modern carrier systems will be dealt with in detail, including both telephone and telegraph carrier systems. The student will study in detail: amplitude modulation; modulation distortion in AM systems; load carrying capacity and intermodulation requirements; equalization and regulation; noise loading; Companders; Group and Supergroup modulation; filter design and annulling networks; VF Telegraph Carrier; neutral and Hub operation.

Students working in pairs per terminal will be able to perform acceptance testing in a situation as found in industry. Modern transistorized carrier systems are available in the lab in an integrated switching situation. Students will be able to set up a call via subscribers' instruments, switching machines and their individual carrier terminal to a counterpart in a similar situation.

Fault location on the equipment and patching facilities will allow the student to efficiently isolate the faulty component before proceeding to locate the exact trouble point.



TET-306 **VHF SYSTEMS** **70 Hours**

Detailed treatment of VHF communication systems including: transmission lines; antennae; propagation; VHF transmitter and receiver circuits; maintenance procedures; specialized equipment.

Laboratory experiments will be performed by the students to support the theory taught and to gain experience in maintenance procedures.

TET-303 **MICROWAVE** **170 Hours**

General treatment of microwave principles including: Smith Charts; wave guides and wave guide components; cavity resonators; Klystrons; magnetrons; travelling wave tubes; microwave transmitters of both high and low power; microwave receivers; antennae; microwave propagation; detailed treatments of operation and analysis of microwave communication systems; an introduction to microwave measuring instruments and techniques.

TET-305 **TRANSMISSION** **110 Hours**

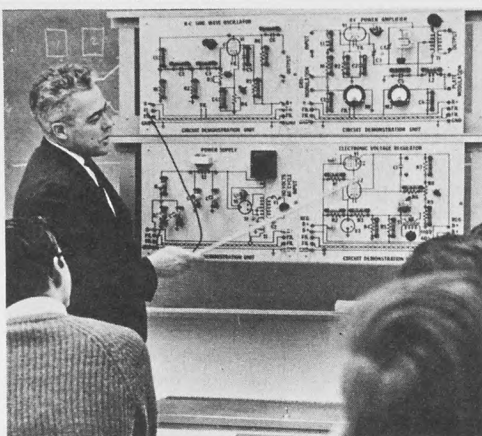
From both a design and operating viewpoint and a transmission system environment, transmission of intelligence as applied to the telephone industry will be taught. Types of transmission facilities: voice frequency, carrier, radio, tv and microwave will be dealt with. Noise considerations, gains and losses, regulation and equalization, plus cable loading techniques will be considered in detail.

Wideband data transmission facilities and data transmission sets used in conjunction with teletypewriter services will be taught. A general outline will be given of wide area teleprinter switching and its associated station equipment capabilities. A detailed consideration of data sets, transmitting, receiving, and timing control circuits will be concluded by theoretical procedures.

Students working in pairs will perform installation and maintenance test procedures on actual station and carrier facilities, with special attention being given to the use of test equipment. Tracing of signals through a complete system including the switching network will be conducted.

TET-309 **SYSTEMS LABORATORY** **40 Hours**

Preparing a report of the tracing of calls through subscribers equipment, switching networks, carrier, radio and microwave systems, interconnected similar to an industry situation.



ELECTRONIC TECHNOLOGY

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

This program is being phased out and will no longer be offered in its entirety. The 2nd year is offered in 1967/68 to accommodate those students who registered in 1966/67 or previously.

SECOND YEAR

Subject	Unit	1st	Term 2nd	3rd	Total Hours
Instrument Theory and Lab. II	ENT-200	80	—	—	80
Microwave and Radar Theory and Laboratory	ENT-202	60	30	30	120
Television Theory	ENT-203	30	30	30	90
Television Laboratory	ENT-206	—	30	60	90
Transmission Laboratory	ENT-204	—	30	—	30
Electronics Theory and Lab. II	ENT-210	—	40	60	100
Pulse Techniques Theory	ENT-216	30	—	—	30
Transistor Theory and Lab.	ENT-217	—	30	—	30
Drafting	DFTG-206	30	30	30	90
Applied Mathematics	MATH-209	30	40	50	120
Physics	PHYS-209	20	20	20	60
English	ENGL-201	20	20	20	60
Total					900

ENT-200 INSTRUMENT THEORY AND LABORATORY II 80 Hours

Analysis of the circuit theory, and applications of laboratory type sub-audio, audio, radio frequency, sweep generators, and frequency standards: circuit and application details of precision vacuum tube voltmeters, impedance bridges, grid-dip meters, Q meters; details of special instruments such as digital voltmeters, wave analyzers, noise generators, electronic frequency counters, vacuum tube curve tracers, distortion analyzers; theory and applications of laboratory type broad band pulsed sweep oscilloscopes.

Experiments to promote familiarization with the application, use and calibration of the advanced laboratory instruments discussed in theory.

ENT-202 MICROWAVE AND RADAR THEORY AND LABORATORY 120 Hours

The general nature and behavior of the ultra-high frequencies; properties and applications of lecher lines, hollow wave guides and cavity resonators; the theory of high frequency triodes, velocity modulated tubes, magnetrons, travelling wave tubes, etc.; high frequency measuring methods, microwave systems; the general principles of radar; details of a typical radar system; experiments to obtain familiarity with transmission line and hollow wave guide behavior; experiments in micro-wave principles; familiarization with high frequency measuring methods; detailed checking and operation of a radar system.

ENT-203 TELEVISION THEORY 90 Hours

The television system; analysis of the composite video signal; picture tubes, power supplies; the r-f tuner; picture i-f amplifier; video detectors; automatic gain control; d-c restoration, video amplifiers; sync. separation; deflection oscillators; afc systems; deflection output circuits; f-m sound systems; t-v antennas and transmission lines.

General details of a television broadcast plant; specific details of camera tubes,

synchronizing generators, camera chains, clamping systems, and the use of film and tape in television.

Familiarity with camera operating problems.

Color broadcasting in general; the N.T.S.C. color signal; color receiver general layout, details of color receiver circuits particularly where there is a wide deviation from monochrome circuits; color picture tubes; color receiver controls.

ENT-206 TELEVISION LABORATORY 90 Hours

Experiments to promote familiarity with the underlying principles of television circuitry; these experiments are designed to make the knowledge gained applicable to other electronic equipment using similar principles; trouble shooting, adjustment and maintenance techniques on a variety of television receivers using both commercial and laboratory type test equipment; experiments with a variety of television antennas; familiarity with the problems of a closed circuit television system.

ENT-204 TRANSMISSION LABORATORY 30 Hours

Experiments to promote familiarity with transmission and modulation principles; tuning and testing a variety of f-m and a-m commercial type fixed and mobile transmitters and transceivers up to one kilowatt.

Regulations governing General Radio Proficiency Certificates for transmitter operation.

ENT-210 ELECTRONICS THEORY AND LABORATORY II 100 Hours

Theory of industrial electronic components such as photo-electric cells, X-ray tubes, thyratrons, geiger tubes, servo-motors and transistors, etc.; theory of and experiments in pulse techniques; theory of and experiments with magnetic amplifiers and servo-systems; theory of and experiments with basic photo-cell circuits, thyatron control circuits, timing circuits, commercial photo-electric equipment motor control systems, electronic heating systems, etc.; theoretical and laboratory problems in basic industrial control systems design; theoretical and laboratory problems in printed circuit design.

ENT-216 PULSE TECHNIQUE THEORY 30 Hours

The generation, shaping and structure of non-sinusoidal wave-forms; discussions in the following areas: introduction to pulses, limiters and clippers, differentiating and integrating d-c restoration, multivibrators, blocking oscillators, sawtooth generators, pulse amplification, delay lines, pulse sampling, Fourier analysis.

ENT-217 TRANSISTOR THEORY AND LABORATORY 30 Hours

Review and expansion of the fundamental theory of transistors; parameters, bias stabilization, audio amplifiers, tuned amplifiers, wide band amplifiers, oscillators, pulse and switching circuits, modulation and demodulation; theory of other semi-conductor devices.

Laboratory exercises in such areas as testing, measuring and interpreting transistor specifications and characteristics; experiments with various transistor amplifiers, oscillators, regulators and switching circuits.

DFTG-206 DRAFTING 90 Hours

Instruments and materials; use of instruments; lettering; applied geometry; orthographic projection; technical sketching; axonometric projection; oblique projection; dimensions and notes; sections and conventions; reproduction of drawings; electronic drawings.

MATH-209 APPLIED MATHEMATICS 120 Hours

The application of mathematical processes to support basic and advanced electronics theory; network and circuit analysis including: response, vacuum tubes, various types of amplifiers, non-sinusoidal waves, transmission lines, f-m waves, antennae, digital systems, logical design.

Course will include the use of logarithms, trigonometry, vector algebra, calculus, binary notation, Boolean algebra, and various "series" analytical methods.

PHYS-209 PHYSICS 60 Hours

Modern physics: electron; discharge tube e/m ratio; atomic masses; quantum theory; black-body radiation; photoelectric effect; Bohr's hydrogen atom; spectral lines; introduction to relativity; Michelson-Morley experiment; mass and energy; nuclear binding energies; radioactivity; nuclear reactions; fusion and fission.

Light: thin lenses; the eye and optical instruments; dispersion; spectra; color; interference and diffraction; polarized light.

ENGL-201 ENGLISH 60 Hours

This course aims to improve students' critical faculties as well as their writing, speaking, and reading skills. The course begins with a review of library research reports, business correspondence, and technical explanations. It includes study of the larger elements of report writing, methods of gathering report data, formal and informal report formats, and the uses of different types of reports — with emphasis on the formal technical report. It also includes a study of the organization and delivery of short speeches (including technical talks) and the conduct of business meetings. The structure and content of published writings, mostly in science and technology, are analyzed and evaluated. Selected readings are also assigned for book reports and class discussions.

Food Service Department

Z. P. MASTALIR, DEPARTMENT HEAD

COMMERCIAL COOKING

COMMERCIAL BAKING

DINING ROOM SERVICE

SHORT ORDER AND SPECIALTY COOKING

COMMERCIAL COOKING

(For Restaurants and Hotels)

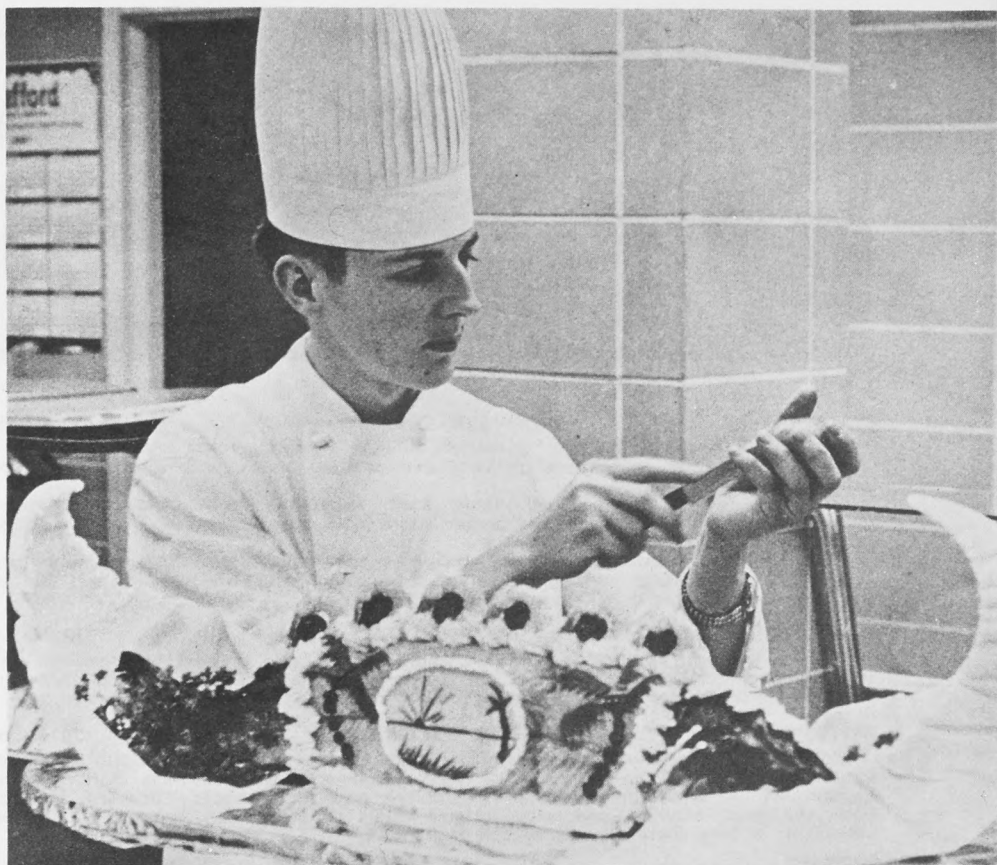
This course is designed to fill the growing need for men and women who are trained in the preparation of food on a large scale. Students are taught to prepare nutritious food in varied and attractive ways, and to purchase and handle supplies so that an establishment may operate at a reasonable profit, observing at all times the importance of cleanliness, sanitation and good public relations.

The first year of the course is intended to acquaint students with the basic principles of commercial cooking. This is accomplished by providing practical experience in the various cooking areas, as well as teaching the related theory and allied subjects by lectures and demonstrations.

In the second year, the knowledge gained in first year is broadened and deepened; emphasis is placed on quantity cooking and all phases of the culinary arts. Advanced food and pastry practice and the classical recipes of French cuisine are followed. The equipment used for this training is the most modern available.

Successful graduates of this course may look forward to well-paid positions in restaurants, hotel dining rooms, institutions and catering establishments.

Admission prerequisites and enrolment regulations are given on pages 18 and 22. A statement of high school results, or other documentary proof, must accompany each application.



COMMERCIAL COOKING

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

FIRST YEAR

Subject	Unit	Hours
Theory of Food	CC-100	210
Kitchen Management and Sanitation	CC-101	30
Shopwork (stations)	CC-104	750
Mathematics	MATH-114	30
Business Knowledge	BK-190	30
Total		1050

CC-100 THEORY OF FOOD 210 Hours
 Basic preparation of meat, poultry, fish, eggs, milk, cheese, vegetables and cereal products; finished products such as sauces, soups and extender dishes, and other items using the above; demonstrations; reports; equipment; field trips.

CC-101 KITCHEN MANAGEMENT AND SANITATION 30 Hours
 Menu planning; kitchen and stores control; buying procedures; time and motion studies; equipment maintenance; work planning; provincial health regulations; storage of food; sanitation responsibilities; food handling rules and methods; dish washing procedures; cleaning schedules; building requirements.



CC-104 SHOPWORK (Stations) 750 Hours

A. Bakery: yeast section; pastry section; fillings; desserts; cakes and cookies.
B. Kitchen: grill and roasting; vegetable section; soups and sauces; larder or preparation; fish butchery.

C. Salad and sandwich area: salads; fruit, vegetable, methods of preparation; garnishing; decorating; sandwiches; bread assortments, preparation of filling; cutting; displaying; hot sandwiches.

D. Advanced production kitchen: recipe preparation emphasizing quality and "finish"; basic classical sauces; advanced Continental and Canadian dishes; buffet item preparation; hors d'oeuvre; omelettes and egg dishes.

MATH-114 MATHEMATICS 30 Hours

Practice in rapid addition, subtraction, multiplication and division of fractions and integers; decimals; long, square and cubic measure; ratio and proportion; problems in percentage; trade discounts; interest; discount; mark-up; sales tax; commission.

BK-190 BUSINESS KNOWLEDGE 30 Hours

Structure of government and legislation: federal, provincial and municipal; Dominion Labour Act; Unemployment Insurance Act; Workmen's Compensation Act; Alberta Labour Act; Alberta Apprenticeship Act; unions and factory acts. Business English: basic principles; business and order letters, letters of application, inquiry, credit and collection; writing short reports; speech training.

SECOND YEAR

Subject	Unit	Hours
Theory of Food	CC-200	210
Kitchen Management and Sanitation	CC-201	30
Shopwork (stations)	CC-204	750
Business Procedures	BK-290	60
Total		1050

CC-200 THEORY OF FOOD 210 Hours

Demonstration of advanced pastry cooking; garde-manger work demonstrated; classical sauces, basic and subsidiary sauces; entrees; casseroles, etc.; cooking of lesser known vegetables; demonstrations of techniques of ice carving for center pieces.

CC-201 KITCHEN MANAGEMENT AND SANITATION 30 Hours

Continuation of first year subject, with greater emphasis on storekeeping procedures, menu planning and making, and maintenance of equipment.

CC-204 SHOPWORK (Stations) 750 Hours

Students rotate through the various stations in a similar manner to that of first year. However, the work will frequently be at a higher level and will require the student to develop extra skills and to assume a greater degree of responsibility.

BK-290 BUSINESS PROCEDURES 60 Hours

The course will contain the following periods of study: balance sheet; assets and liabilities; owner's equity; cost and value; debit and credit; journal and ledger; uses of a trial balance; closing the books; revenue and expense; income tax statement; retained earnings; adjustments; accruals; revenue and cost of apportionments after closing trial balance; accrual and cash basis of accounting; merchandise operations; simplified income tax statement; two principal sources of revenue; internal control; pay-roll including taxes; employees taxes withheld; payroll tax accruals; sales tax; employer-employee relations.

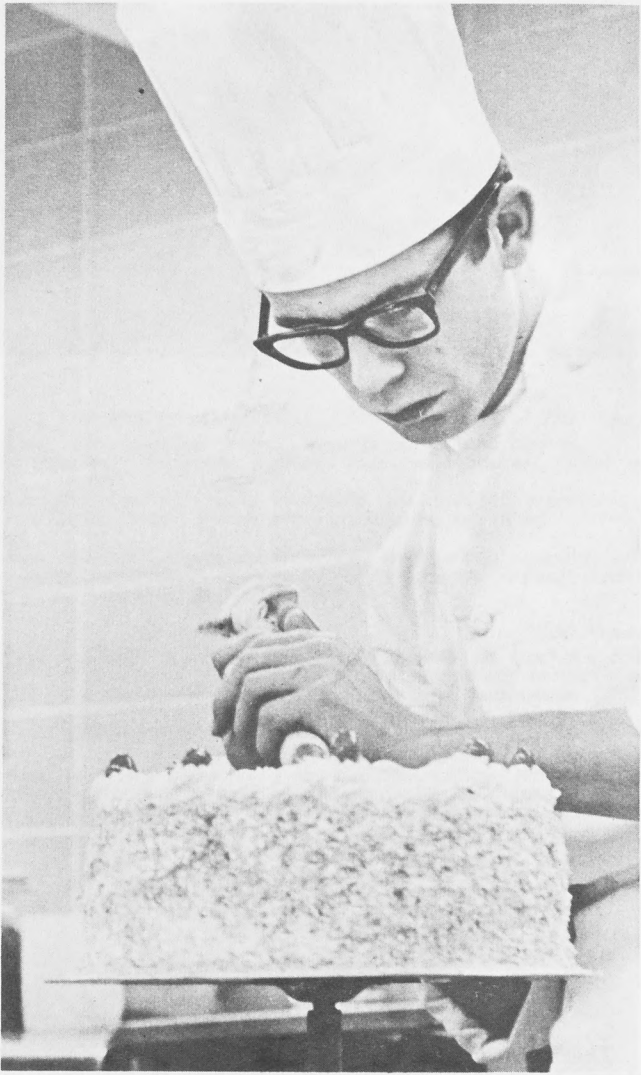
COMMERCIAL BAKING

This course is designed to provide trained personnel to fill the growing demands of this very essential branch of the food industry. Students are taught the latest techniques in pastry and bread making. In addition they will also learn the history of this ancient art as well as strict adherence to standardized recipes of the present day, nutritious values of finished products, purchasing and handling of supplies; observing at all times the importance of cleanliness and good public relations.

The first year of the course will acquaint students with the basic principles of baking, emphasizing commercial quantity production and the operation of tools and equipment. They gain this knowledge by practical experience, demonstrations and theory lessons.

During the second year, emphasis is placed on demonstrations of advanced techniques in the production of specialty breads, fermented goods, cakes, artistic decorating of wedding cakes and work with sugar and chocolate. In addition to theory and practical trade training, students receive instruction in related food chemistry and science and elements of business.

Admission prerequisites and enrolment regulations are given on pages 18 and 22. A statement of high school results, or other documentary proof, must accompany each application.



COMMERCIAL BAKING

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

FIRST YEAR

Subject	Unit	Hours
Theory of Baking and Demonstrations	CB-100	180
Shopwork	CB-104	750
Bakery Orientation	CB-102	30
Elements of Business	BK-192	60
Sanitation	CB-101	30
Total		1050



CB-100 THEORY OF BAKING AND DEMONSTRATIONS 180 Hours

History of baking, terminology of the trade, weights and measures, grains and milling, rope, mould, types of flour, leavening agents, eggs, milk, water, salt, fats and oils, mixing, dough temperatures, fermentation; bread doughs, bread and bread rolls, sweet doughs, molding, proving, baking, baking temperatures, cooling and wrapping; frying temperatures, glazing, packaging; basic pie doughs, pie fillings, thickening agents; cake baking and decorating.

CB-104 SHOPWORK 750 Hours

Commercial quantity production; tools and equipment; dough making, mixing methods, trough or bench proving, scaling of dough and molding; baking temperatures, timing; sweet goods; donuts, cinnamon buns, butterhorns, pecan buns; various pie doughs and their production, pie fillings, baking temperatures and handling of finished products; production of basic cakes; ingredients, mixing, baking, evaluation of finished product and corrections; cake finishing, creams and fondant icings, use of food coloring, simple decorating.

CB-102 BAKERY ORIENTATION 30 Hours

Purchasing, receiving and checking; storekeeping, inventory, bakery equipment; production planning, waste elimination, utilization of leftover products; job analysis, job descriptions, job specifications.

BK-192 ELEMENTS OF BUSINESS 60 Hours

Elements of record keeping, balance sheet, debit and credit, adjustments, merchandise operations; an introduction to commercial law; law of contracts, agency, negotiable instruments; business letters and reports.

CB-101 SANITATION 30 Hours

Sanitation responsibilities, personal and baking hygiene; sanitary handling of foods; provincial health regulations; utensil washing procedures, equipment cleaning, safety regulations; fire precautions; first aid and accident procedures.

SECOND YEAR

Subject	Unit	Hours
Theory of Baking and Demonstrations	CB-200	180
Shopwork	CB-204	750
Elements of Business	BK-291	90
Food Chemistry and Science	CB-203	30
Total		1050

CB-200 THEORY OF BAKING AND DEMONSTRATION 180 Hours

Advanced techniques in production of fermented goods, artistic decorating, specialty breads, dough retarding, batters, pastes, tarts, cookies, muffins, biscuits, scones, puff paste and its products, choux paste products, French pastries, Genoese pastry, pastry creams, puddings and jellies. Uses of frozen, dried and fresh and canned fruits; spices, essences, syrups, fondant icings, meringues, royal icing, almond paste, nougat, fruit cakes, wedding cakes.

CB-204 SHOPWORK 750 Hours

Advanced production of specialty breads and other fermented goods; miscellaneous product improvements; puff paste, Danish pastry, turnovers, French pastry, Petit fours.

BK-291 ELEMENTS OF BUSINESS 90 Hours

Continuation of bookkeeping, profit elements, calculation of profits, determining and planning markup, pricing policies, how to take and value inventories; law of employment; master and servant, Unemployment Insurance Act, Workmen's Compensation Act; forms of ownership, proprietorship, partnerships, the Companies Act.

CB-203 FOOD CHEMISTRY AND SCIENCE 30 Hours

Chemical symbols, organic chemistry; baker's chemistry, acids, alkalis and salts; carbohydrates, proteins, enzymes; analysis of fats, minerals, vitamins; study of baking ingredients and additives.



DINING ROOM SERVICE

The food service industry, whether it involves luxurious establishments catering to the discriminating tastes of the general public, or institutions and cafeterias serving large numbers of patrons, is a complex one demanding strict health practices, economy, efficiency, competency and good grooming.

This is particularly true in regard to tourism, an industry which is dependent in large part on good food service for its development. Enlightened communities and organizations promoting tourism recognize this and plan accordingly.

There is a heavy demand for persons well trained in basic food service practices, providing many opportunities for those who seriously wish to pursue a career in this industry.

The course is of nine weeks' duration and is offered three times during the year, starting on October 16, 1967, January 2, and March 4, 1968. Registration should be made in advance of any of the above dates. Fees are \$28 including the \$5 registration fee.

Prospective students will be interviewed by a selection committee consisting of members of the Food Service Department's instructional staff. Selection will be based on candidates' suitability, education, aptitude and experience.

Practical experience, in addition to that given during the course, may be gained by part-time work with pay in the evenings and on weekends.

NOTE: If the numbers enrolling in this course do not justify its presentation the course will be cancelled.

Subject	Unit	Hours
Shopwork	CC-110	180
Dining Room Service Theory	CC-111	45
Theory of Food	CC-112	36
General Knowledge	GK-191	9
Total		270

CC-110 SHOPWORK 180 Hours

Table setting; meeting, greeting and serving the guest; table clearing; stacking and carrying trays; timing, ordering, picking up; opening and closing duties.

CC-111 DINING ROOM SERVICE THEORY 45 Hours

Fundamentals of good service; personal appearance; sanitary manners and habits; courtesy and personality; responsibilities to public; menu terminology; accidents prevention; French service; American service; banquet service; wine service.

CC-112 THEORY OF FOOD 36 Hours

Menu and cookery terms; menu planning; appetizers; soups; entrees; extender dishes, etc.; demonstrations.

GK-191 GENERAL KNOWLEDGE 9 Hours

Unemployment Insurance Act; Workmen's Compensation Act; Alberta Labour Act; business letters; public speaking, English and spelling; interviews.



SHORT ORDER AND SPECIALTY COOKING

This course is designed to fill the many vacancies for Short Order and Specialty Cooks, which have become available due to the rapidly expanding tourist trade.

During this course students are taught preparation of breakfast foods, use of the frier, grill and broiler, preparation of soups, sauces, roasts, vegetables and the making of salads and various types of sandwiches. Kitchen management and sanitation are also part of this course. The training is provided by highly skilled chef instructors, each a specialist.

Upon completion of the course, successful graduates can look forward to well-paid positions in restaurants, hotels, institutions and specialty houses.

Admission prerequisites and enrolment regulations are given on pages 18 and 22.

SHORT ORDER AND SPECIALTY COOKING

One-Year Course

September 1967 to May 1968

Fee for this course is \$60.00 plus Registration Fee of \$5.00

FIRST YEAR

Subject	Unit	Hours
Shopwork (Stations)	SOC-124	750
Theory of Food	SOC-120	180
Kitchen Management and Sanitation	SOC-101	60
Elements of Business	BK-191	60
Total		1050

SOC-124 SHOPWORK (Stations) 750 Hours
 Breakfast: cooking cereals, meats and fish, waffles, pancakes, egg dishes and beverages; kitchen: grilling, broiling, frying, soups, sauces, roasts, vegetables, specialty dishes; salad section: salads, fruit, vegetables, methods of preparation; garnishing; decorating; sandwiches; preparation of filling; cutting; displaying; hot sandwiches.

SOC-120 THEORY OF FOOD 180 Hours
 Menu and cookery terms, measures, cooking methods; basic preparation of meat, poultry, fish, eggs, milk, cheese, vegetables and cereal products; finished products such as soups, sauces, roasts, specialty dishes; demonstrations; reports: equipment: field trips.

SOC-101 KITCHEN MANAGEMENT AND SANITATION 60 Hours
 Menu planning; kitchen and stores control; buying procedures; time and motion studies; equipment maintenance; provincial health regulations; sanitation responsibilities, food handling rules and methods; dishwashing procedures, cleaning schedules; personal hygiene.

BK-191 ELEMENTS OF BUSINESS 60 Hours
 Elements of record keeping, balance sheet, debit and credit, adjustments, merchandise operations, an introduction to commercial law; law of contracts, agency, negotiable instruments; business letters and reports.

Health Service Courses

G. H. HARE, ACTING DEPARTMENT HEAD

DIETARY SERVICE TECHNOLOGY

MEDICAL LABORATORY TECHNOLOGY

DIETARY SERVICE TECHNOLOGY

I. INTRODUCTION

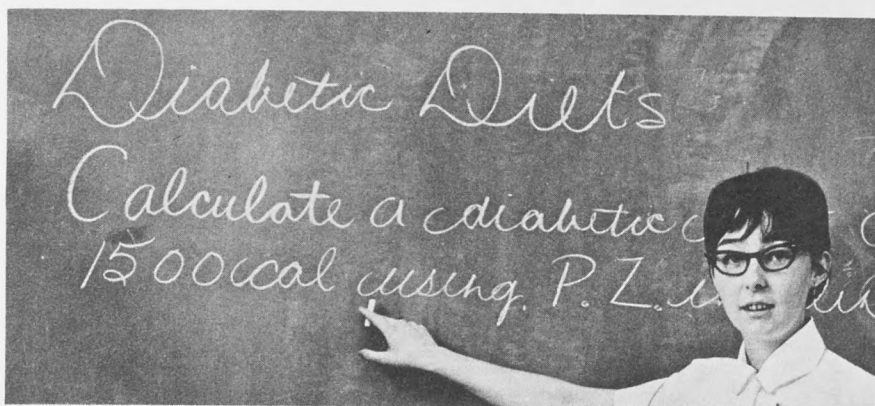
There is an increasing need for competent technicians in the field of institutional food service all across Canada. To help alleviate this shortage the Department of Education, the Department of Health and the Alberta Registered Dietitians Association combined their efforts to produce the dietary service technician course. The graduate will be capable of assisting Registered Dietitians in large establishments or of assuming a large portion of responsibility for food service in small operations where qualified dietitians are unavailable.

In the two-year program the first eight months are spent at the Institute on theory and laboratory practice. This is followed by eight and a half months' practical experience in one of the affiliated hospitals. Students return to the Institute for a ten week seminar period. Upon successful completion of both theoretical and practical work, the student will graduate from the program with a Technology diploma.

A genuine interest in people and their welfare is essential to a Dietary Service Technician. They must have a professional attitude at all times and be able to work in harmony with other members of the staff. The work is varied, interesting, and rewarding in terms of personal satisfaction and results.

All students will be required to wear a standard white uniform and white clinic shoes. In addition to the regular entrance prerequisites, each applicant must provide a Medical Health Certificate which will certify that he or she has a good health history and sufficient physical vigor to perform the demanding tasks required of persons in the Food Service Industry.

Admission prerequisites and enrolment regulations are given on pages 17 and 22. A statement of high school results, or other documentary proof, must accompany each application.



DIETARY SERVICE TECHNOLOGY

Two-Year Course

FIRST YEAR

(September to May Approximately).

Subject	Unit	Hours
Nutrition and Physiology	DST-100	180
Foods	DST-101	180
Commercial Food Preparation	DST-102	120
Institutional Management	DST-103	120
Personnel Management	DST-104	120
Food Purchasing	DST-105	30
Business Mathematics	MATH-110	90
Business English	ENGL-101	60
Dietary Office Procedure	DST-106	60
Sanitation, Health & First Aid	DST-107	30
Typing	TYG-100	60
Total		1050

FIELD TRAINING PERIOD

The field training period is tentatively scheduled for the months of June to February inclusive for a total of approximately 1200 hours.

SECOND YEAR THEORY

(Tentatively scheduled for the months of March to May)

Nutrition and Physiology	DST-200	30
Foods	DST-201	30
Institutional Management	DST-203	60
Personnel Management	DST-204	30
Food Purchasing	DST-205	30
Business Mathematics	MATH-210	30
Business English	ENGL-290	30
Dietary Office Procedure	DST-206	60
Total		300

NOTE: The above information may be subject to change. Further information was not available at the time of publication.

MEDICAL LABORATORY TECHNOLOGY

The technologists in medical laboratories carry out tests that aid doctors in their diagnostic and treatment procedures. The main demand is from hospitals but medical laboratory technologists may work in government laboratories, for pharmaceutical companies, public health clinics, or in universities.

The program is two years in length. Approximately ten months is spent at SAIT in formal study. The students are given a grounding in bacteriology, chemical tests, tissue tests and blood tests. Somewhat more time is spent learning laboratory procedures than for theory classes. The second year of the programme involves practical training in the laboratory of an affiliated hospital for a period of twelve months. At the end of this time, students must write the examinations to qualify as a Registered Technologist with the Canadian Society of Medical Laboratory Technologists.

Persons interested in this field must apply to the Director of Laboratories at any of the following hospitals. Do not apply directly to the Institute.

Calgary

Foothills General Hospital
Calgary General Hospital
Holy Cross Hospital
Rockyview General Hospital

Medicine Hat

Medicine Hat General Hospital

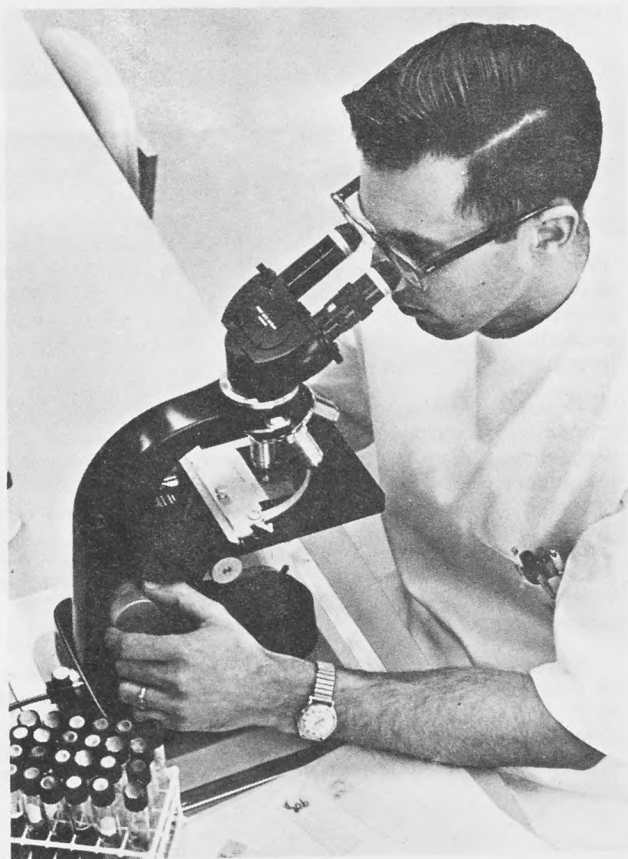
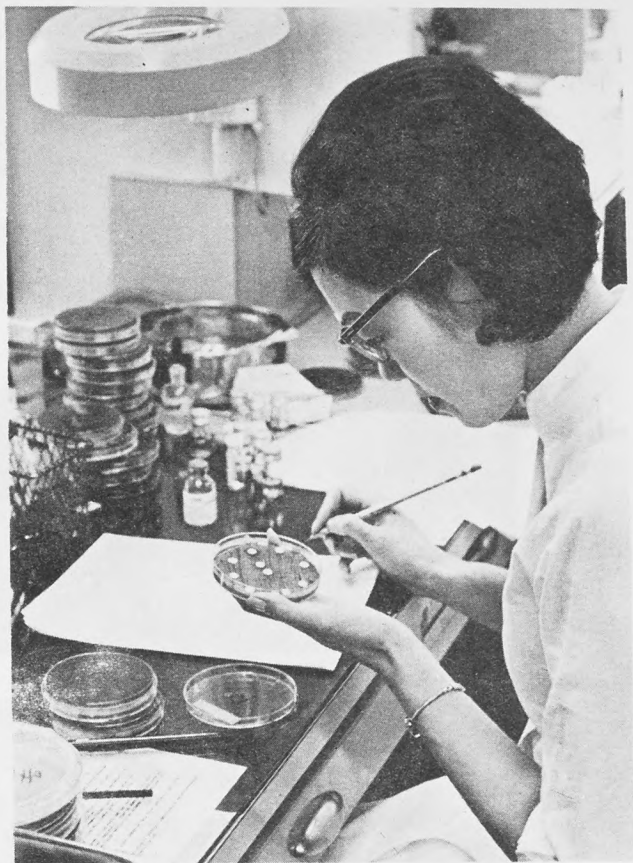
Edmonton

General Hospital
Miseracordia Hospital
Royal Alexandra Hospital
University of Alberta Hospital

Lethbridge

Lethbridge Municipal Hospital
St. Michael's Hospital

NOTE: The above information may be subject to change. Further information was not available at the time of publication.



Mathematics and Physics Department

C. W. BREWSTER, DEPARTMENT HEAD

COMPUTER TECHNOLOGY

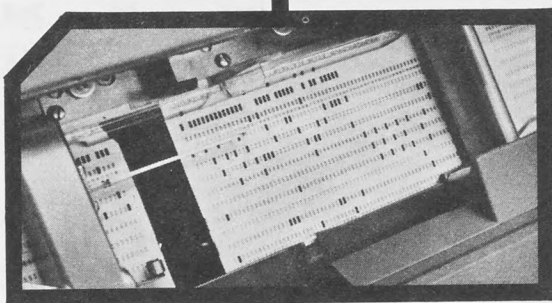
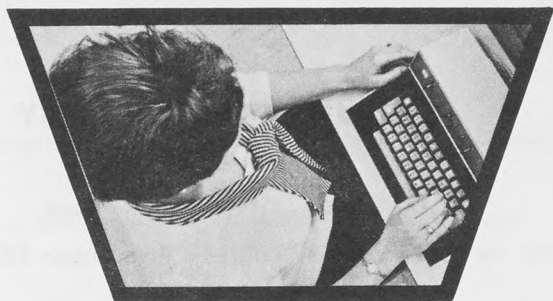
COMPUTER TECHNOLOGY

The prototype of the modern electronic digital computer was completed in 1945. Since that time there have been enormous advances in the hardware design of electronic computers. The industry is now turning its attention to the software field. There is a growing need for programmers and systems analysts. With these facts in mind the institute is offering a two-year course in systems and programming.

This course will provide training in mathematics, physics, business, English, economics, sociology and statistics in support of the main course of data processing. Approximately one half of the students' time will be spent in the laboratories in a computer oriented environment. The students will be expected to handle problems of both scientific and business application.

Graduates of this course should find immediate employment in data centers doing routine programming, program maintenance, and machine operation. With experience and further study on the job, such persons should become junior systems analysts.

Admission prerequisites and enrolment regulations are given on pages 16 and 22. A statement of high school results, or other documentary proof, must accompany each application. Applicants will also be interviewed to determine their interest in mathematical analysis and they will be given a programmers aptitude test at the above mentioned interview.



COMPUTER TECHNOLOGY

Two-Year Course

September 1967 to May 1968

Fee for each year is \$75.00 plus Registration Fee of \$5.00.

FIRST YEAR

Subject	Unit	Quarter			Total Hours
		1st	2nd	3rd	
Data Processing I	CT-158	168			168
Data Processing II	CT-159		168		168
Data Processing III	CT-160			168	168
Mathematics	MATH-158	48	48	48	144
Business Accounting	BA-118	60	60	60	180
English	ENGL-118	48	48	48	144
Physics	PHYS-158	36	36		72
Statistics I	MATH-168			36	36
Total					1080

CT-158 DATA PROCESSING I 168 Hours

Lectures and labs are given in the use of unit record equipment, including sorters, collaters, and punches, verifiers and accounting machines. Case studies will be made involving accounting principles and U/R equipment.

CT-159	DATA PROCESSING II	168 Hours
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Basic computer systems, binary arithmetic; storage devices and internal operation of the computer; computer programming at the machine language level; program modification; input/output.

CT-160 DATA PROCESSING III 168 Hours

Compiler languages: FORTRAN, COBOL and ALGOL; operating systems; applications including statistical, numerical and business problems.

MATH-158	MATHEMATICS	144 Hours
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Number theory; set theory, elementary logic and Boolean algebra; systems of linear equations, determinants and matrix algebra; permutations and combinations, binomial theorem; probability theory; series; exponentials and logarithms; trigonometry; elements of sets and Venn diagrams; truth tables and symbolic logic.

BA-118	PRINCIPLES OF BUSINESS ACCOUNTING	180 Hours
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Balance sheet and income statement; journal; ledgers; closing of books; accruals; revenue and expense; control accounts; cash receipts and cash disbursement; accounting principles; cash flow; control accounts; cost-process; operations direct; accounting systems; branch, agency, and consolidation.

ENGL 118 ENGLISH 144 Hours

Basic communication skills; adapting language to the receiver; organization of information; critical thinking; oral communication; group discussion and conference techniques; written communications in business.

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PHYS-158 PHYSICS 72 Hours
Units and measurement; properties of matter; gas laws and heat; electricity and magnetism.

MATH-168 STATISTICS I 36 Hours
Problems of sampling, linear regression, correlation and quality control.

SECOND YEAR

Subject	Unit	1st	Quarter 2nd	3rd	Total Hours
Data Processing Systems I	CT-258	180			180
Data Processing Systems II	CT-259		180		180
Data Processing Systems III	CT-260			180	180
Mathematics	MATH-258	48	48	48	144
Physics	PHYS-258	36	36		72
English	ENGL-218	48			48
Statistics II	MATH-268	48			48
Business Application of D.P.	CT-278		48		48
Scientific & Eng. Applications of D.P.	CT-288			48	48
Industrial Sociology	ENGL-268		48	48	96
Economics	BA-208			36	36
Total					1080

CT-258 DATA PROCESSING SYSTEMS I 180 Hours
Operating systems, multi-programming and teleprocessing; systems analysis, magnetic tape and disc organization; sorting and merging techniques.

CT-259 DATA PROCESSING SYSTEMS II 180 Hours
Data acquisition and reduction; case studies in ALGOL, COBOL and PLI; problem seminars.

CT-260 DATA PROCESSING SYSTEMS III 180 Hours
Introduction to operations research, linear programming and critical path scheduling; inventory control and forecasting techniques; simulation studies.

MATH-258 MATHEMATICS 144 Hours
Differential calculus; derivatives, rates of change applications; integral calculus; integration and the application of integration; differential equations.

PHYS-258 PHYSICS 72 Hours
Mechanics, vectors, velocity and acceleration, Newton's Laws; simple harmonic motion, wave motion, sound and light; modern physics; electronics; atomic physics; introduction to solid state physics.

ENGL-218 ENGLISH 48 Hours
Critical reading; this section of the course is designed to develop the student's ability to read rapidly and critically.

MATH-268 MATHEMATICS 48 Hours
Sampling theory, linear regression; correlation and quality control.

CT-278 BUSINESS APPLICATION OF DATA PROCESSING 48 Hours
Commercial case studies; billing; accounts receivable; sales analysis; inventory control; a case study of general ledger accounting; a case study of oil and gas production accounting.

CT-288 SCIENTIFIC AND ENGINEERING APPLICATIONS OF DATA PROCESSING 48 Hours
Mathematical model building; curve fitting; approximation methods and critical path scheduling.

ENGL-268 INDUSTRIAL SOCIOLOGY 96 Hours
Patterns of individual work behaviour; the relationship between the individual and the organization; the supervision of personnel.

BA-208 ECONOMICS 36 Hours
A descriptive course in supply and demand, business cycles and economic forecasting; economics of the firm; average cost; average fixed cost; revenue and marginal revenue.

Metals Department

F. W. EDWARDS, DEPARTMENT HEAD

MANUFACTURING TECHNOLOGY WELDING COURSES

MANUFACTURING TECHNOLOGY

Industrial manufacturing is undergoing a profound change. The intensity of industrial competition, demands of experimental design, revision of the functional requirements of products and the challenge of automation are some of the reasons for this change. Manufacturing must meet these new requirements.

In a successful manufacturing organization, all functions must be co-ordinated. Designs must be suitable for production in terms of functionality, cost, materials, manpower and market requirements. The manufacturing technologist will fill this necessary role of co-ordinator.

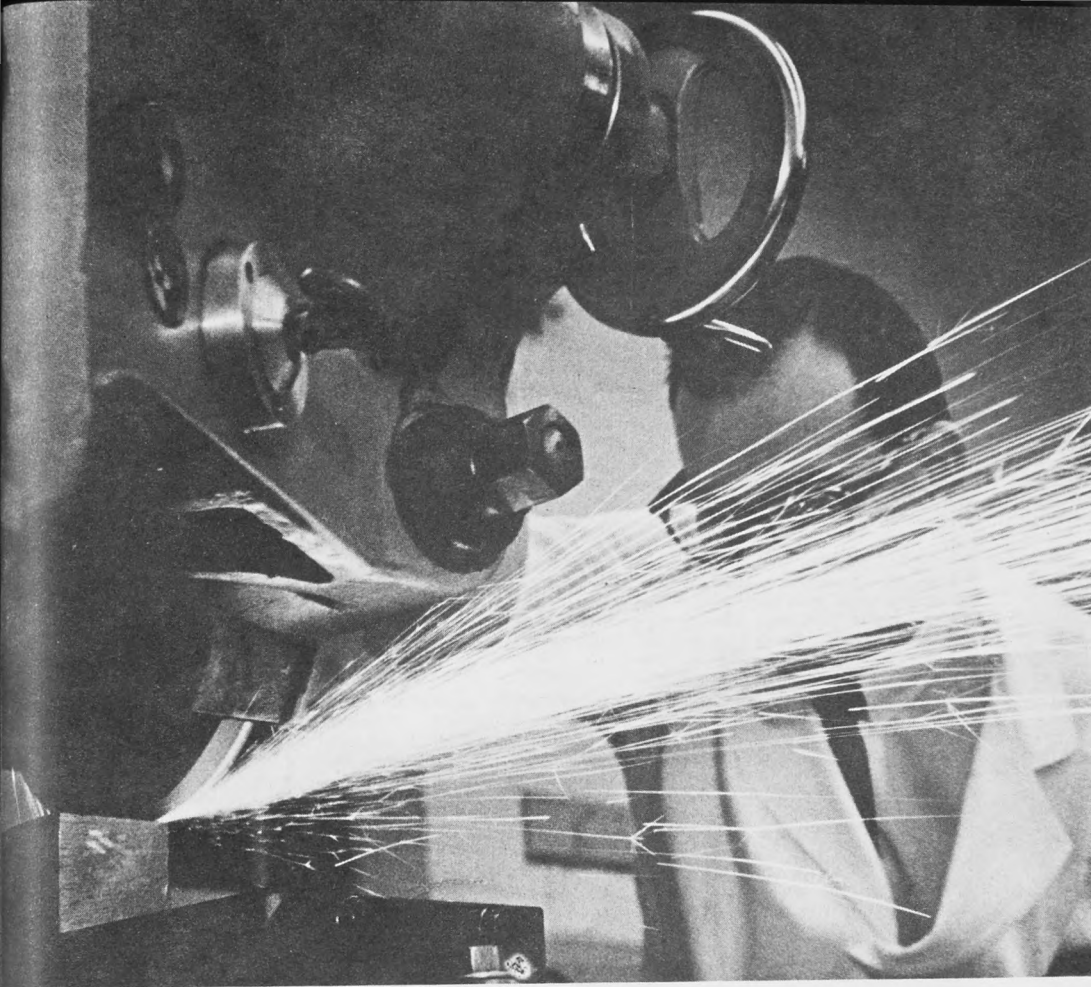
The training given to the manufacturing technologist will provide him with extensive knowledge of not only processes, materials and inspection methods, but also cost accounting, statistics and industrial psychology. This knowledge will be combined with practical experience in manufacturing processes and procedures, gained through simulated industrial conditions in shops and laboratories.

There are many roles for the Manufacturing Technologist in the manufacturing organization. He may be called upon to act as a co-ordinator between the Engineering and Design department and the manufacturing plant, making sure that designs that enter the plant are not impossible to produce, and that they will be produced by the most economical method available.

He may be correlating contributing departments to ensure manufacture proceeds at the most efficient rate — he could also be responsible for the supply and acceptance of raw, semi-finished, and finished components, as well as the requirements of Government and other official inspectorates. Other areas of employment envisioned are planning, production progress, research and development, quality control, work study, inventory control and costing.

Graduates of this course are eligible for membership in the Alberta Society of Engineering Technologists. Please refer to page 27 of the calendar for further information.

Admission prerequisites and enrolment regulations are given on pages 17 and 22. A statement of high school results, or other documentary proof, must accompany each application.



MANUFACTURING TECHNOLOGY

Three-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

This course is designed as a continuation of the Alberta Vocational High School program. Students taking the appropriate vocational program will be expected to complete Grade XII and enter "B" year. Others may apply to enter "A" year after completion of an appropriate Grade XI program.

"A" YEAR

Subject	Unit	Hours
Machine Shop	MT-101	300
Machine Shop Theory	MT-102	100
Metallurgy	MLY-130	65
Drafting	DFTG-131	230
Mathematics	MATH-130	135
Physics	PHYS-130	135
English	ENGL-130	135

Total 1100

MT-101

MACHINE SHOP

300 Hours

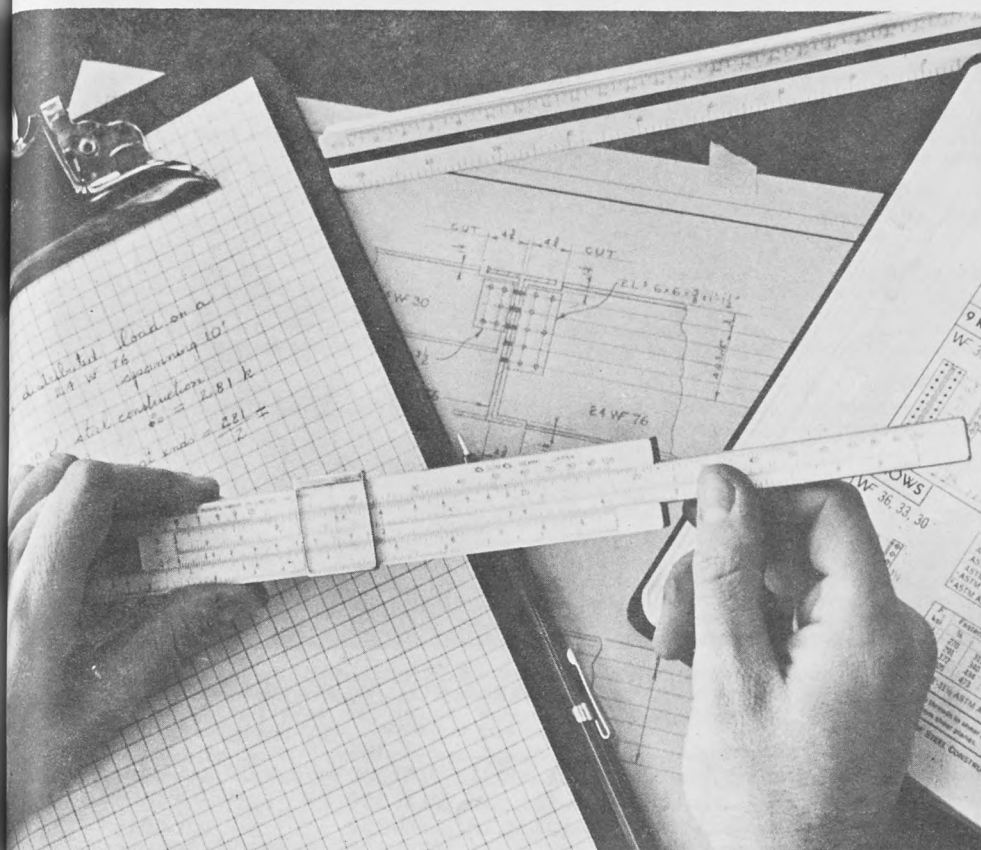
Layout procedure; elementary bench work; operation of the lathe for parallel; taper and threaded work; elementary shaper work; surface grinding; cylindrical grinding; surface milling; keyway milling; making of Spur Gears; forging; heat treating.

MT-102	MACHINE SHOP THEORY	100 Hours
Measuring instruments; layout procedure; bench tools; drilling machines; lubricants and coolants; thread forms; construction and operation of the lathe; construction and operation of the shaper; use of milling machines; use of surface grinders and cylinder grinders.		
MLY-130	METALLURGY	65 Hours
Review of chemistry; slip and plastic deformation; production of pig iron in the blast furnace; production of cast iron, wrought iron and steel; ingot practice; working and shaping of metals; rolling; forging; extrusion and drawing; production and properties of non-ferrous metals and their alloys; copper, aluminum, zinc, nickel and magnesium; foundry practice; control and practice.		
DFTG-131	DRAFTING	230 Hours
Instruments and materials; use of instruments; lettering; geometric constructions; theory of projection drawing; orthographic projection; technical sketchings; auxiliary views (single); sections and conventions; dimensions; pictorial drawing (axonometric, oblique, perspective); intersections and developments; reading drawings; reproduction of drawings.		
MATH-130	MATHEMATICS	135 Hours
Rational numbers; equations and inequalities; quadratic equations with rational roots; irrational numbers; functions; graphs; variations; elements of coordinate geometry; the quadratic function; equations of the second degree and their graphs; the sine and cosine functions; oblique triangles; trigonometric equations and identities; polynomials.		
PHYS-130	PHYSICS	135 Hours
Mechanics: velocity and acceleration, uniformly accelerated motion, vector properties of velocity, falling bodies, Newton's law of motion, projectiles, Newton's law of gravitation, statics equilibrium, centre of mass, friction, work, energy, power, conservation of energy, momentum, conservation of momentum. Heat: temperature and expansion, heat capacity, changes of state, refrigeration and geysers, heat energy, gas laws, mechanical equivalent of heat, Electricity: static electricity, Coulomb's law, charges in motion, Electro Motive Force, batteries, Ohm's law, series circuits, parallel circuits. Laboratory experiments are conducted for all major topics.		
ENGL-130	ENGLISH	135 Hours
This course is aimed at increasing the student's interest and skill in reading, in understanding literature, and in expressing ideas clearly, accurately and effectively in speech and writing. Appropriate texts and readings will be assigned.		

"B" YEAR

Subject	Unit	Hours
Machine Tool Theory	MT-201	60
Machine Tool Lab	MT-202	180
Mechanical Equipment	MT-203	60
Metallurgy	MLY-230	60
Mechanical Drafting	DFTG-235	180
Electrical Lab and Theory	ET-235	90
Mathematics	MATH-235	120
FORTRAN Programming	CT-200	30
Physics	PHYS-235	90
English	ENGL-230	60
Total		930

MT-201	MACHINE TOOL THEORY	60 Hours
Theory and design of cutting tools; advanced work on the lathe; drilling and boring, including jig boring; milling for optimum tool life, stock removal and production; the use of milling attachments; turret lathe construction and operations; automatic lathes; jobs and fixtures; forging and forming; gear production; broaching machines; press tools; advanced grinding; thread grinding; honing and lapping; numerical control; production casting.		
MT-202	MACHINE TOOL LAB	180 Hours
Advanced bench work; advanced lathe work; basic tool making; gear cutting; experiments and exercises to evaluate machine tool operations; exercises in precision measurement.		
MT-203	MECHANICAL EQUIPMENT	60 Hours
Bearings; clutches; couplings; power transmission equipment; pumps; piping and valves; hydraulics; pneumatics; conveyors and handling equipment; feeding devices; lubricants; packings; fans and blowers; instrumentation.		



MLY-230

METALLURGY

60 Hours

Metal structure and crystallization; construction of alloys; equilibrium diagrams; the iron-carbide diagram; heat treatment of steel; annealing, normalizing, quenching and tempering; interrupted quenching; martempering and austempering; surface hardening of steel; carburising, nitriding, cyaniding, flame, and induction hardening; alloy steels; tool steels; the microstructure and heat treatment of cast iron; laboratory work to illustrate the microstructures and heat treatments described during lectures.

DFTG-235

MECHANICAL DRAFTING

180 Hours

Review of previous work; threads, fasteners and springs; welding drawings; piping drawings; shop processes; sheet metal drawing; dimensioning and tolerancing; gears; bearings; production drawings.

ET-235

ELECTRICAL LABORATORY AND THEORY

90 Hours

THEORY:

Basic concepts of current, voltage, resistance; Ohm's law; correct use of meters; power and energy; magnetism and magnetic properties of iron; electromagnetic induction, inductance, mutual inductance, capacitance; basic single-phase a-c circuit theory, including power factor; basic transformer theory; three-phase delta and wye connections and advantages of three-phase power; construction, theory of operation and characteristics of d-c motors, three-phase motors and single-phase motors; types of motor enclosures and principles of motor maintenance; electrical hazards; the Canadian Electrical Code, its purpose and scope.

LABORATORY WORK:

Basic circuits, including laws of series and parallel circuits; single-phase transformer connections; magnetic switches and starter control circuits.

MATH-235

MATHEMATICS

120 Hours

Algebraic fractions; exponents and logarithms; sequences and series; coordinate geometry; rectangular coordinates, polar coordinates, space coordinates; analytic trigonometry; radian measure, identities, addition formula, inverse functions; elements of calculus: derivatives and integrals of basic polynomial, exponential, logarithmic and

trigonometric functions, applications to geometric problems, rates, approximations, summation, graphical methods; curvature: tangent and normal, radius of curvature, parabola path, simple harmonic path, parameters; charts and nomograms.

CT-200 FORTRAN PROGRAMMING 30 Hours

Introduction to computer systems; FORTRAN constants, variables, operations and expressions; arithmetic statements; input/output; program running; control transfer; subscripted variables; DO statements; further input/output; functions and specifications statements; laboratory exercises.

PHYS-235 PHYSICS 90 Hours

INTRODUCTION:

Fields and uses of physics.

MECHANICS:

Vectors, velocity and acceleration (excluding instantaneous velocity and acceleration), force and motion (excluding variable acceleration), friction, work and power (excluding instantaneous power), energy, torque, rotation of rigid bodies (Excluding instantaneous angular acceleration, derivation of moments of inertia), uniform circular motion.

PROPERTIES OF MATTER:

Elastic properties of solids, liquids at rest, properties of gases (excluding volume elasticity of gases).

HEAT:

Temperature measurement, heat quantities.

ENGL-230 ENGLISH 60 Hours

This course is designed to improve the student's ability to write and speak clearly, concisely, and effectively. It includes a detailed study and practice of technical writing principles and style. Special techniques of technical writing. Types and formats of formal and informal reports. Business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

"C" YEAR

Subject	Unit	Hours
Metrology and Inspection	MT-301	90
Production Planning	MT-302	90
Metallurgy	MLY-330	90
Welding	W-332	60
Mechanical Drafting and Design	DFTG-305	270
Cost Accounting	BA-319	90
Industrial Psychology	BA-369	90
Mathematics	MATH-302	90
English	ENGL-301	60
Total		930

MT-301 METROLOGY AND INSPECTION 90 Hours

Standards of measurement; sealed instruments and verniers; micrometers; gauge blocks; comparators — optical and electrical; pneumatics; optical measurements; angle measurements; surface standards; inspection systems and organization; typical standards of inspection.

MT-302 PRODUCTION PLANNING 90 Hours

Organization for production; flow plans; auxiliary equipment and tooling; time and work study; storage and handling; estimating; exercises and projects utilizing this information.

MLY-330 METALLURGY 90 Hours

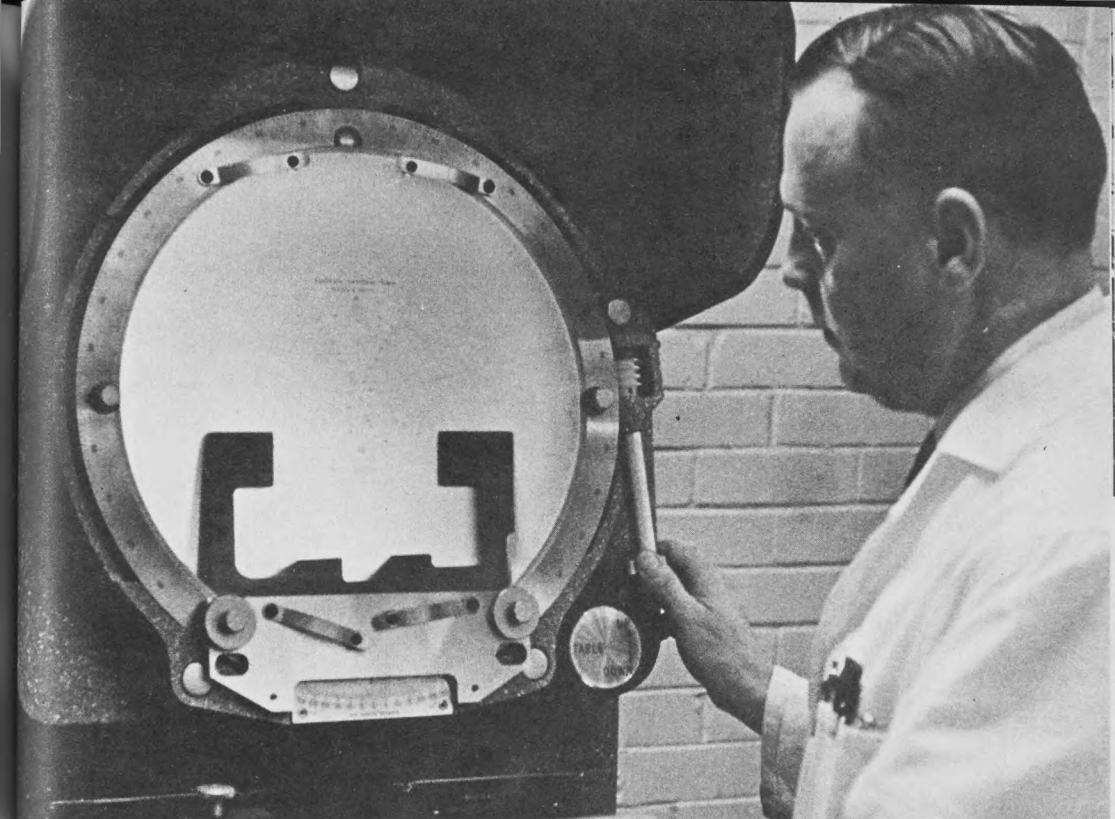
Metallurgical inspection and testing; theory of plastic deformation; microstructures and properties of non-ferrous metals, their alloys and heat treatment; corrosion and wear of metals, and preventive measures available; properties of metals at high and low temperatures; service failures, their examination and interpretation; plastics; laboratory work, preparation of specimens for microscope examinations; inspection of failures; non-destructive testing.

W-332 WELDING 60 Hours

Oxy-acetylene Processes:

Properties of gases; effect of types of flames on weld properties; flame cutting; low temperature brazing; applications to ferrous and non-ferrous metals; advantages, limitations, costs.

Electric Processes:



Types of arc welding equipment, including manual, semi-automatic, automatic and inert atmosphere; types of electrodes, their physical properties and AWS classification; effect of multi-pass welding on weld quality; hard surfacing; resistance welding; application, advantages, limitations and costs.

Types of joints; jiggling devices; distortion and its control; stress removal and heat treatments; design of welded structures for dynamic and static loading; testing of welded joints.

DFTG-305 MECHANICAL DRAFTING AND DESIGN 270 Hours

Review of second year work; strength of materials; power transmission; materials handling; fasteners; production aids; design problems.

The emphasis in the course will be on the design and manufacturing plan of mechanical elements and projects. As much as possible, knowledge from welding, machine shop, metrology, materials, etc. will be included in design projects. Approximately the last one third of the time will be spent in large projects designed to correlate the manufacturing processes with the economic considerations.

BA-319 COST ACCOUNTING 90 Hours

Manufacturing costs; nature and use of cost accounting, cost elements, classifications and systems; materials-purchasing, receiving, issuing, control, costing; inventory control systems; labour; overhead-applied, actual, departmentalized; completion and sale of the product; types of systems — job order, process, operational, direct costing; budgetary controls and standard costs.

BA-369 INDUSTRIAL PSYCHOLOGY 90 Hours

Introduction; individual differences in behavior; job analysis and requirements; the interview and related personnel methods; personnel testing; performance appraisal; training; measurement of attitudes and morale; motivation and job satisfaction; human behavior in organizations; financial incentives; working conditions; equipment and work design; human error; accidents and safety.

MATH-302 MATHEMATICS 90 Hours

Statistics and probability; statistical presentation; basic statistical measurements; basic probability theory; normal distribution; sampling theory; quality control; correlation and regression; practical applications in production control and industrial engineering; simulation techniques; linear programming.

ENGL-301 ENGLISH 60 Hours

This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal technical reports. It also includes a study of the mass media, and a study and application of the principles of public speaking, types of formal and informal speeches and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluation.

WELDING COURSES

The overwhelming acceptance of welding as a means of fabricating or repairing all types of metal objects and equipment has made welding one of the largest industries known today. From scratch-paper to spacecraft, welding has played its part.

It has been said that if all welding processes were suddenly removed from use, industry in general would grind to a halt within a matter of days. The demand for welding operators has reached a high unheard of since World War II. There is a definite shortage of fully trained operators.

The Institute offers the following short courses at specific times throughout the year:

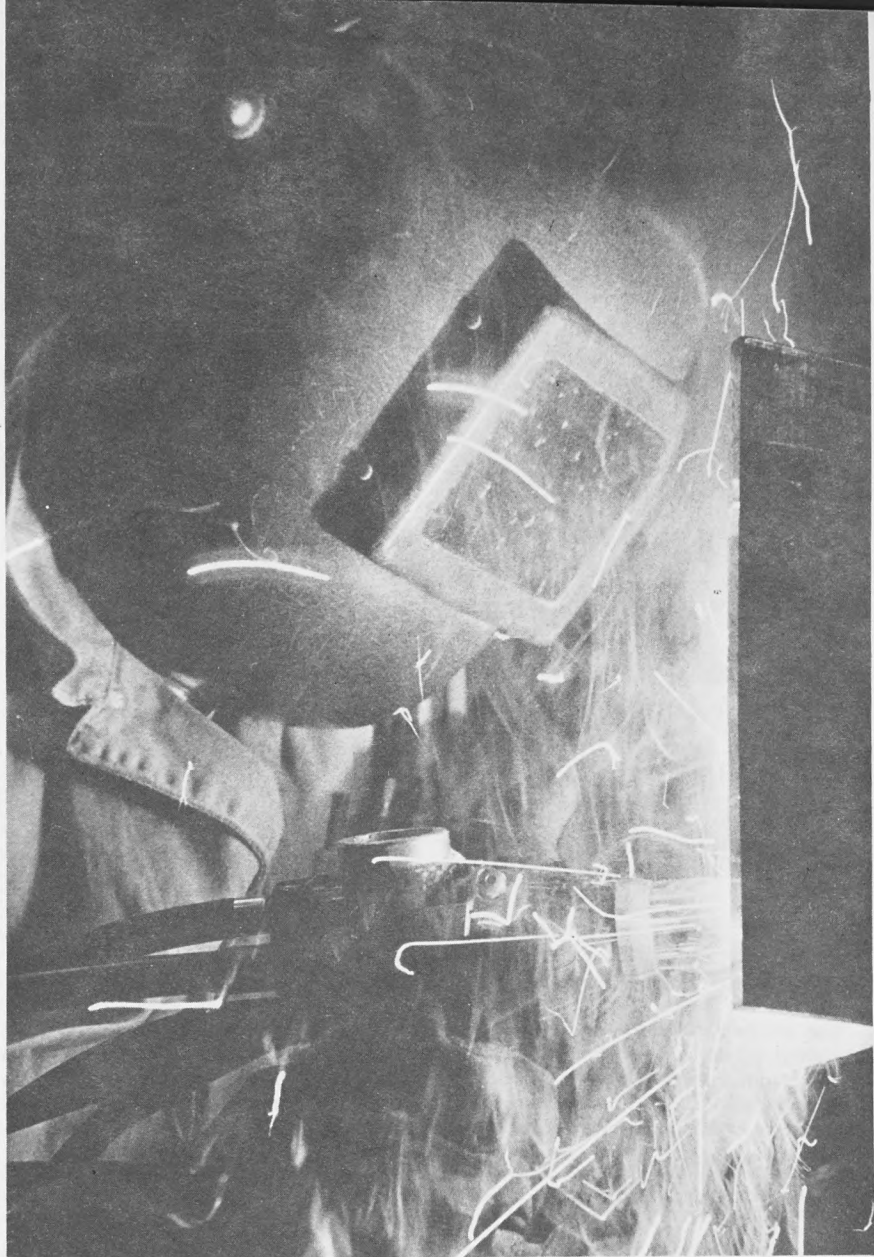
Fee for 90 hour courses is \$53.00 plus Registration Fee of \$5.00.

Fee for 180 hour courses is \$96.00 plus Registration Fee of \$5.00.

Combined Oxy-Acetylene and Electric Arc	180 hours
Oxy-Acetylene	90 hours
Electric Arc	90 hours
Pressure "B"	90 hours
Inert Gas	90 hours

Admission prerequisites and enrolment regulations are given on pages 19 and 22.

Full particulars are available from the Registrar, either by mail or by telephoning 289-4916.



WELDING

BEGINNERS COMBINED OXY-ACETYLENE AND ELECTRIC WELDING 180 Hours

A course designed to assist those seeking apprenticeships, or students pursuing hobbies, farm welding, etc.; the basics of welding.

OXY-ACETYLENE WELDING 90 Hours

ELECTRIC ARC WELDING 90 Hours

Short courses designed to upgrade in anticipation of trade testing for Certificates of Proficiency, or for beginners who require training in only one type of welding.

PRESSURE "B" ARC WELDING 90 Hours

A course designed to upgrade Journeyman Operators to pressure welding status under the Boilers Act.

T.I.G. AND M.I.G. WELDING OF ALUMINUM 90 Hours

A specialized short course in inert-gas shielded arc welding, using tungsten inert gas and metal inert gas processes. Emphasis is placed on aluminum, although the process may also be used on magnesium alloys, stainless steels and copper.

Petroleum Department

A. P. WORKUN, DEPARTMENT HEAD

PETROLEUM TECHNOLOGY

PETROLEUM TECHNOLOGY

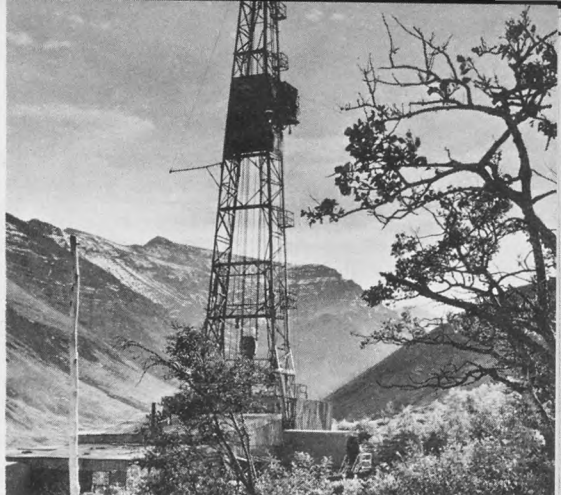
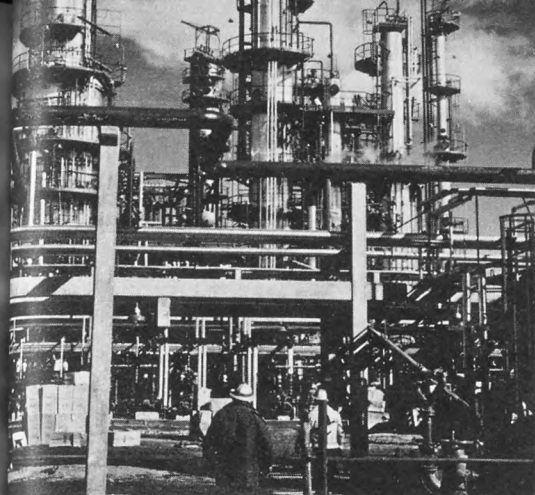
The petroleum industry in Canada is directly and indirectly responsible for the employment of large numbers of technicians. Modern industry requires highly trained men with the latest techniques, and the petroleum industry is no exception. This industry has the reputation of demanding highly qualified men and is willing to pay for them.

The aim of this course is to provide engineering and geological technicians for the petroleum industry. Students are trained to work for the many service companies closely allied to the industry, including such services as fracturing, acidizing and cementing. Subsequent to some field training, these technicians will be able to carry out various drilling, production and work-over programs in the field, or to serve in other varied supervisory capacities. In some instances graduates assist engineers in economic evaluation programs and in reservoir studies. Basic knowledge of chemistry and of gas handling and processing will enable them to embark on careers in gasoline recovery plants. A good grounding in geology will enable graduates to make excellent wellsite geologists or to work on maps, strip logs or core analysis in the geology branch of oil companies. Familiarization with the varied equipment used in the oil industry will enable graduates to become technical salesmen or company representatives.

Graduates of this course are eligible for membership in the Alberta Society of Engineering Technologists after two years of suitable industrial experience.

Please refer to page 27 of this calendar for further information.

Admission prerequisites and enrolment regulations are given on pages 16 and 22. A transcript of high school marks, or other documentary proof, must accompany each application.



PETROLEUM TECHNOLOGY

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

FIRST YEAR (1967-68)

Subject	Unit	Hours
Oil Field Operations	PT-100	120
Oil Field Operations Laboratory	PT-101	90
Petroleum Geology	PT-102	120
Petroleum Geology Laboratory	PT-103	90
Chemistry	CHEM-105	60
Drafting and Surveying	DFTG-111	90
Mathematics	MATH-105	120
Physics	PHYS-105	120
English	ENGL-101	60
FORTRAN Programming	CT-100	30
Total		900

PT-100 OIL FIELD OPERATIONS 120 Hours

Drilling section; rotary drilling — basic principles, mechanical procedure; nomenclature of principal rig parts and surface layout; drilling personnel and their duties; power and transmission, draw-works, rotary machinery, drilling and coring tools; well pressure and volume calculations; drilling fluid systems, fluid hydraulics, mud mixing and weighting calculations; casing, cementing, cement calculations, drill stem testing, plotting drilling progress charts, drilling time and bit records; well head control equipment, directional drilling; production section; origin and accumulation of oil and gas, organic theory, well equipment, artificial lift, separation of oil and gas, storage, gauging and switching; Oil and Gas Conservation Board regulations and reports; well testing and battery proration; lease maintenance tools, oilwell service and workover section; bringing a well into production, mechanical repairs, production stimulation treatments, clean out operations, permanent type completion equipment.

PT-101 OIL FIELD OPERATIONS LABORATORY 90 Hours

Plotting drilling progress charts, drilling time and bit records; checking various properties of drilling mud; calculation and plotting of results of directional deviation surveys; special problems in cementing and casing string design; properties and tests of oils; introduction to various surface and sub-surface oil production equipment; drill stem testing; witness operation of a core hole rig; field trips to study drilling and production equipment and a large rotary drill in operation.

PT-102 PETROLEUM GEOLOGY 120 Hours

The geologic time scale and general distribution of rocks of the various periods; significant names in the history of geology; origin of the earth in space, its age and internal organization; sedimentary, igneous and metamorphic rocks; properties of minerals: crystal forms; hardness, radio-activity, etc.; weathering; erosion by running water, ground water, wind, glaciers; development of land forms, valleys, mesas, waterfalls, lakes, badlands, deserts, etc.; mountain building, isostasy, faulting, earthquakes; volcanism; introduction to structural geology.

PT-103

PETROLEUM GEOLOGY LABORATORY

90 Hours

Intensive study of thirty economic minerals using specimens; examination of sedimentary, igneous and metamorphic rock types; solutions of structural and stratigraphic problems; training in observation of geological features with the aid of slides and movies; practical exercises in geomorphology using models; field trip to study structure, stratigraphy and physiography.

CHEM-105

CHEMISTRY

Lab. and Theory—60 Hours

The states of matter: gases, the kinetic-molecular theory, liquids, solids; the atomic theory, chemical reactions; the structure of matter: electronic configuration of atoms, the periodic law, chemical bonding; solutions; properties, acids, bases, pH; the chemistry of silicon.

Related laboratory work.

DFTG-111

DRAFTING

90 Hours

Care and use of instruments; geometric construction; lettering; orthographic projection; dimensioning; sectioning and auxiliary views; axonometric projection; oblique projection; pictorial sketching; topographical drafting and its uses; design and use of conventional symbols; contouring methods and drawing contour maps; methods of plotting angles; methods of plotting traverses; use of specialized drafting instruments; profiles and cross-sections.

MATH-105

MATHEMATICS

120 Hours

A study of the elementary functions of modern mathematical analysis with emphasis on the development of manipulative skills and including an introduction into the methods of the calculus: the functions, concept and notation; graphs, equations, derivatives and integrals of simple algebraic functions together with manipulative drills and applied problems; graphs, equations and derivatives of simple trigonometric functions with manipulative drills and applied problems; graphs, equations and derivatives of simple logarithmic and exponential functions; use of common and natural logarithms and slide rule; applied problems.

PHYS-105

PHYSICS

120 Hours

Properties of matter: measurement, systems of units; elastic properties of solids; liquids at rest; properties of gases.

Heat: temperature measurement; thermal expansion; heat quantities; latent heat; humidity, heat transfer by conduction, convection, and radiation.

Mechanics: vectors; forces at a point; velocity and acceleration; force and motion; Newton's laws; friction; work and power; energy; torque; rotation of rigid bodies; momentum; uniform circular motion; fluids in motion.

ENGL-101

ENGLISH

60 Hours

This course is designed to improve the student's ability to write and speak clearly, concisely, and effectively. It includes a detailed study and practice of technical writing principles and style; special techniques of technical writing; types and formats of formal and informal reports; business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

CT-100

FORTRAN PROGRAMMING

30 Hours

Introduction to computer systems; coding methods; input and output devices. Fortran; constants, variables, operations and expressions; arithmetic statements; input and output; control transfer; subscripted variables and DO statements; functions and specification statements. Lab exercises.

SECOND YEAR (1967 - 1968)

Subject	Unit	Hours
Oil Field Operations	PT-200	120
Oil Field Operations Laboratory	PT-201	90
Petroleum Geology	PT-202	120
Petroleum Geology Laboratory	PT-203	90
Chemistry	CHEM-205	60
	(Theory)	60
	(Laboratory)	30
Drafting and Surveying	DFTG-211	90
Mathematics	MATH-205	90
Physics	PHYS-205	150
English	ENGL-201	60
Total		900

PT-200

OIL FIELD OPERATIONS

120 Hours

Reservoir rock characteristics, porosity, permeability; viscosity, solubility and compressibility of reservoir fluids; oil and gas reserve calculations, reservoir bulk volume and volumetric estimate of stock tank oil in place; Darcy's reservoir flow equations;

economic allowance and mpr's, production and prorating; use of the deadweight tester and manometers for calibrating purposes and also for the measurement of pressure, flow and liquid level; determining the super-compressibility factor from critical and pseudocritical temperatures and pressures of both pure and mixtures of gases and applied to correct for deviation from the perfect gas laws and gas flow measurement; mercury and dri-flow meter runs, pitot tube, orifice well tester, critical flow prover; calculating gas flow, orifice coefficients, orifice plate size; pipe line flow, Weymouth equation; gas well testing and absolute open flow calculations.

PT-201 OIL FIELD OPERATIONS LABORATORY 90 Hours

Cutting and mounting cores in lucite; porosity, permeability and water saturation determinations; bottom hole pressure and temperature bombs; use of a dead weight tester; special gradient problems, top of cement, gas-oil and oil-water interfaces; gas well testing, open flow potentials from back pressure tests; gas measurement, orifice coefficient calculations; gas property determinations, gravity, gpm content; special problems involving calculation of oil and gas reserves; metering of liquids; sieve analysis; water quality tests; field trips to a commercial reservoir, core laboratory and a gasoline recovery plant.

PT-202 PETROLEUM GEOLOGY 120 Hours

Study of formations of central plains and foothills of Western Canada, nomenclature, distribution, lithology and petroleum possibilities; summary of world petroleum basins and production; approaches to exploration and material which should be included in a geological report; review of the physical and chemical characteristics of oil as they concern origin and migration; methods of presenting geological data, types of maps, air photos, base maps, structure contours, isopach maps and lithofacies maps; study of reservoir rocks; classification of gas and oil traps, structural, stratigraphic, combined types; reefs emphasized; stratigraphy, lithology fossils, sources of detritus; written and strip logs of actual cuttings and cores; extensive study of electric logs; geophysical methods, magnetic, gravimetric, seismic, geochemical, etc.; combining geophysical and geological maps; origin and migration of petroleum; field trip to foothills to study structure and stratigraphy and use of Brunton compass.

PT-203 PETROLEUM GEOLOGY LABORATORY 90 Hours

Extensive study of logs, electric, radioactivity, sonic and micrologs; construction of contour maps, isopachs and cross-sections from well logs; extensive practice in sample and core description techniques using microscopes; familiarization with typical fossils from Western Canada; ten hours study of air photos, including use of stereoscopes; miscellaneous geological problems.

CHEM-205 CHEMISTRY Laboratory 30 Hours; Theory—60 Hours

The nature, classification and refining of petroleum and natural gas, including a survey of the principal petroleum products.

Laboratory testing of petroleum and petroleum products by standard A.S.T.M. test procedures; introduction to gas chromatography.

Theory and laboratory study of: the colloidal state of matter; oxidation and reduction; the electromotive series, electrode potentials and electrochemical cells; corrosion.

DFTG-211 DRAFTING AND SURVEYING 90 Hours

Calculation of land areas and earthwork volumes; base maps for small scale drawings; elementary photogrammetry; elementary photo reading; limitation of aerial photos; oil company drafting methods; pipe drawings; a minimum of 18 hours of survey field work — elementary level, transit, plane table and chaining; plotting of maps from survey data; solution of geological problems by graphical methods.

MATH-205 MATHEMATICS 90 Hours

Analytical geometry of the conic sections and a further study of functions with emphasis on the calculus and applied problems: rate of change problems; differentials; approximations; maxima and minima; curve sketching; applied problems in maxima and minima; integration; definite integrals; summations; fundamental theorem; areas; volumes; centroids; moments of inertia; integration of trigonometric, logarithmic and exponential functions; applied problems; integration by substitution; integration by parts; integration by partial fractions; integration of inverse trigonometric functions; simple differential equations (time permitting).

PHYS-205 PHYSICS 150 Hours

Fluid mechanics: fluids in motion, Bernoulli's theorem, flow meters, flow systems; optics: light and illumination, reflection, refraction, thin lenses, optical instruments; electricity: charges and fields, potential, circuits, measurements, magnetic effects and materials, instruments, energy and power, induction, capacitance, ac series circuits.

ENGL-201 ENGLISH 60 Hours

This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal technical reports. It also includes a study of the mass media, and a study and application of the principles of public speaking; types of formal and informal speeches; and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluation.

Power Engineering Department

J. A. MIDDLETON, DEPARTMENT HEAD

POWER ENGINEERING TECHNOLOGY

This Department is also responsible for the Correspondence Courses listed on page 222.

POWER ENGINEERING TECHNOLOGY

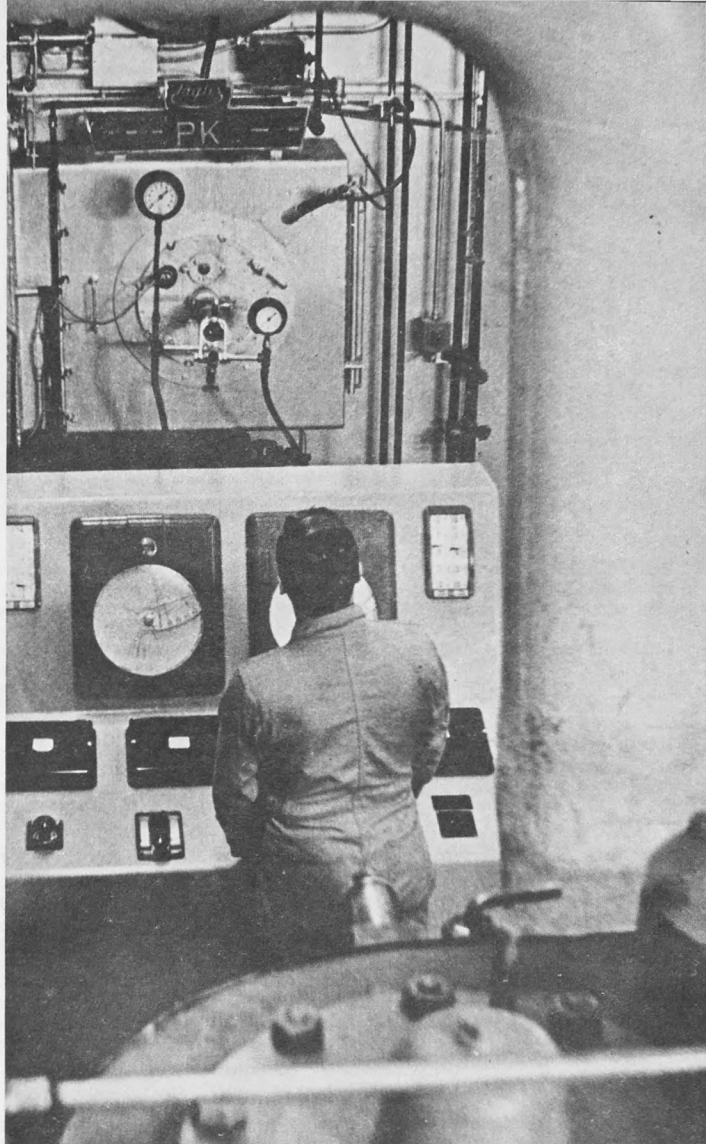
During the past decade, considerable progress has been made in Power Engineering, and the duties and responsibilities of the Power Engineer have increased accordingly. The future will undoubtedly show many further advances. To prepare young men for entrance and progress in this interesting aspect of industry, the course in Power Engineering is being offered.

Provincial Acts require the certification of competent engineers before they may assume responsibilities in a power plant. Elementary certificates require examinations covering steam boilers and auxiliaries, while First and Second Class Certificate examinations cover such knowledge as pressure vessel design, power plant economics, design features of turbines, electricity, air compression, refrigeration, pumps, and thermodynamics. A First Class engineer is authorized to have full charge of a plant of unlimited horsepower.

Training in subjects such as those listed above will provide a real challenge to industrious, mechanically-minded students. There is at present a scarcity of competent Power Engineers, and the expanding industrial economy is continually increasing the demand. Graduates of this course are granted an Alberta Third Class Certificate, thus qualifying them to accept positions as Power Engineers. Other positions available may be in design offices, in mechanical or industrial sales outlets, and in nuclear power plants.

Graduates of this course are eligible for membership in the Alberta Society of Engineering Technologists after two years of suitable industrial experience. Please refer to page 27 of this calendar for further information.

Admission prerequisites and enrolment regulations are given on pages 16, and 22. A statement of high school results, or other documentary proof, must accompany each application.



POWER ENGINEERING TECHNOLOGY

Two-Year Course

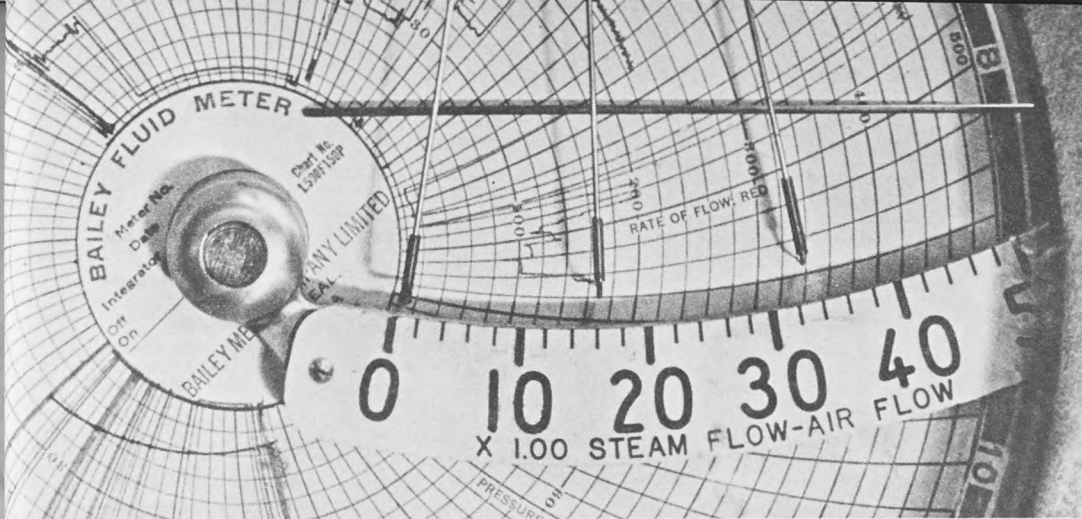
September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

FIRST YEAR

Subject	Unit	Hours
Power Theory	PET-100	90
Power Laboratory	PET-101	150
Heat Engines	PET-102	90
Machine Shop	MS-103	60
Electrical Theory and Laboratory	ET-105	120
Drafting	DFTG-112	90
Chemistry	CHEM-106	60
Physics	PHYS-117	110
Mathematics	MATH-117	100
FORTTRAN Programming	CT-100	30
English	ENGL-101	60
Total		960

- PET-100 POWER THEORY 90 Hours**
 Steam Generators: steam generation, circulation principles, steam separation, water tube and fire boilers; C.S.A. B-51 and A.S.M.E. drum design; auxiliary equipment; advanced design; furnace design and construction; steam generator ratings and performance characteristics.
 Superheaters; reheaters; economizers and air heaters; superheat temperature control; corrosion control.
 Draft systems: combustion; flow resistances; fan characteristics; fan selection; fan drives and controls; pressurizing furnaces.
 Fuel and ash handling: handling systems; elements of mechanical systems; plant coal handling installations; coal storage; fuel oil handling; fuel gas handling.
 Dust collection: dust types and measurement; air pollution control; emissions from fuel burning equipment; flue dust collection and disposal.
 Feedwater heaters and evaporators: feedwater heating; de-aerators; closed heaters; heater design; evaporators; regenerative feed heating.
 Power station pumps: pumps, N.P.S.H.; boiler feed pumps; condensate pumps; circulating water pumps; pump performance.
- PET-101 POWER LABORATORY 150 Hours**
 Boilers: construction details; fittings; instruments; control and safety devices; firing methods — gas and oil; inspection and cleaning; renewal of tubes and stays; water gauge glass testing and renewal; safety valve testing and setting; piping layouts; blow down tanks.
 Pumping: pump construction and overhaul; repairing; valve setting and testing.
 Valves: types and uses; construction details; repair methods.
 Piping: threading and welding; bending; insulating; expansion joints; bends and hangers; flanges.
 Steam engines: construction details; methods of operation.
 Steam turbines: construction details.
 Field trips to local power plants.
- PET-102 HEAT ENGINES 90 Hours**
 Heat measurement: temperature scales; steam tables; heat mixtures; throttling and separating calorimeters.
 Engines: steam, internal combustion; I.H.P.; B.H.P.; mechanical and thermal efficiencies.
 Combustion: fuel types and analysis; methods of firing; composition of gases; heat balances.
- MS-103 MACHINE SHOP 60 Hours**
 Practical shop work involving the use of hand tools and measuring instruments. Machine work will include projects requiring the use of basic machine tools. Theory is closely related to the shop work.
- ET-105 ELECTRICAL THEORY AND LABORATORY 120 Hours**
 Theory: Electrical units; Ohm's law; Electrical power and energy; Conductors and wire sizes; wiring systems; Magnetism and electromagnetic induction; Principles and characteristics of d-c generators and d-c motors; alternating current fundamentals; Single-phase transformers.
 Laboratory: Series and parallel circuits; Use and care of instruments; Ohm's law experiments; experiments on three-wire system; Basic control circuits for d-c motors; Basic transformer connections.
- DFTG-112 MECHANICAL DRAFTING 90 Hours**
 The use of drafting instruments and equipment; geometrical constructions; lettering; orthographic projection; isometric projection; oblique projection, theory of dimensioning; sections and conventions; sketching techniques; threads and fasteners; piping drawing; reproduction of drawings; welded drawings.
- CHEM-106 CHEMISTRY 60 Hours**
 Review of fundamental laws; elements, compounds and mixtures; physical and chemical changes; chemical nomenclature.
 Oxidation — reduction reactions; gases of industrial importance and methods of production; production of iron and steel.
 Principles of oil refining; natural gas treatment and sulphur extraction; lubricants; types and qualities.
 Boiler water conditioning, the principles and methods used; water analysis; boiler scale formation; corrosion and methods of prevention.
- PHYS-117 PHYSICS 110 Hours**
 Mechanics: Units, vector quantities, forces, torque, linear motion, force and motion, work and energy, momentum, fluids at rest.
 Heat: Temperature and heat, thermal expansion, change of phase, heat transfer, thermodynamics.



PHYS-117

PHYSICS

110 Hours

Real numbers, approximate numbers; common logarithms, slide rule; functions; graphs; limits, derivatives and integrals of polynomial functions; graphs; summation; area under the graph, derivatives and integrals of exponential and logarithmic functions; graphs; natural logarithms; circular functions; radian measure; range and domain; algebraic signs, fundamental identities; negatives, compliments, supplements; functional values; use of tables, compound angles; double and half angles, derivatives and integrals; graphs; solution of triangles.

CT-100

FORTRAN PROGRAMMING

30 Hours

Introduction to computer systems; coding methods; input and output devices, FORTRAN; constants, variables, operations and expressions; arithmetic statements; input and output; control transfer: subscripted variables and DO statements; functions and specification statements. Lab exercises.

ENGL-101

ENGLISH

60 Hours

This course is designed to improve the student's ability to write and speak clearly, concisely and effectively. It includes a detailed study and practice of technical writing principles and style; special techniques of technical writing; types and formats of formal and informal reports; business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

SECOND YEAR

Subject	Unit	Hours
Power Theory	PET-200	120
Thermodynamics Laboratory	PET-201	150
Thermodynamics	PET-202	120
Automatic Control Systems	PET-203	60
Metallurgy	MLY-202	60
Electrical Theory	ET-205	120
Welding	W-202	60
Physics	PHYS-217	100
Mathematics	MATH-217	80
Industrial Computer Techniques	CT-217	30
English	ENGL-201	60
Total		960

PET-200

POWER THEORY

120 Hours

Steam prime movers: turbine development; basic turbine forms; nozzles; blading; vector calculations; mechanical drive turbines; industrial turbines; central station turbines; governing and lubrication systems; turbo-alternator cooling systems; turbine performance; instruments; testing.

Steam engines: simple valve gear; lap; lead; angle of advance; compound and uni-flow engines; lubrication; indicator diagrams; governing; performance.

Condensers: theory; surface condensers; direct contact condensers; auxiliaries; performance and installation; cooling water supply; cooling towers.

Power station piping and layout: piping systems; high temperature effects; pipe supports; valves; traps; joints and insulation; piping layout.

A.S.M.E. codes: description and application to boiler and pressure vessel design; selection of materials; minimum thickness of plates, tubes, and shells; fusion welding — preparation, stress relieving and testing; boiler joints, welded, seamless, and riveted; ligaments, heads, stays; openings and reinforcements; safety valves.

Refrigeration and air conditioning: theory of operation; refrigerants; compressors; evaporators; condensers; absorption systems; valves and controls; C.S.A. B.52; air conditioning systems.

Air compression: reversed Carnot cycle; clearance volumes; compressor types; stage compression; centrifugal compressors; lubrication; valves and controls.

Hydro plants: water power; dams and conduits; turbine types; speed and pressure controls; plant operation.

Nuclear plants; nuclear fuels; reactor operation and types; steam generators.

Economics: investment charges; interest; depreciation; amortization; taxes; insurance; fixed charges; annual operating costs; methods of economic selection; load curves; maximum demand; capacity and utilization factors; selection of plant location; equipment and cost.

Theory of structures.

PET-201

THERMODYNAMICS LABORATORY

150 Hours

Boilers: efficient operation; testing; heat balance; repairs and maintenance; automatic controls — overhaul, troubleshooting and repair. Steam engines; valve setting; indicator cards; testing; synchronizing. Steam turbines: methods of operating; testing; blade types; efficiency tests with various blade types and back pressures.

Condensers and auxiliaries: construction and operation; cooling.

Water treatment: operating; back flushing; regenerating.

Boiler water testing and conditioning: sampling and testing; use of chemicals; test procedures.

Diesel engine and spark ignition engines: construction; operating and testing.

Gas turbine: construction; starting; operating and testing.

Refrigeration: operating procedures; heat balance test.

Air conditioning: inspection of plant layout.

Field trips to local power plants.

PET-202

THERMODYNAMICS

120 Hours

Review of Gas Laws, non-flow systems, p-v diagrams.

First law of thermodynamics: fundamental energy equation; steady flow systems; internal energy and enthalpy; use of steam tables.

Isothermic and adiabatic processes; throttling.

Power cycles: Carnot; Rankine; thermal efficiencies; second law of thermodynamics.

Entropy: definition and calculations; T-O diagrams for perfect gases and steam; Mollier diagram for steam.

Heat engine cycles: Rankine; reheat; regenerative; applications.

Internal combustion engines: ideal cycles — Otto, air standard, diesel; gas turbine — Brayton cycle and power plants.

Air compression; reciprocating compressors; volumetric efficiency calculations; centrifugal compressors; power calculations.

Refrigeration: reversed Carnot cycle; refrigerants.

Flow through nozzles: critical pressure ratio; adiabatic flow; actual flow calculations; turbine nozzle action; turbine blade action; impulse and reaction blades; stage efficiencies.

Air Conditioning: Dalton's Law; mixtures of air and water vapor; dew point; humidity; air conditioning processes.

PET-203

AUTOMATIC CONTROL SYSTEMS

60 Hours

An introduction to industrial processes and their control. Processes: their frequencies; points of measurement and optimum control. Control modes: terminology; primary sensing elements; fundamentals of pneumatics and electronics; transmitters; amplifiers; thermoelectric measurement with potentiometers; valves and final control elements; phase lag, gain, and control instrument application; flame failure devices and interlocks; integrated combustion control systems; organization of the meter shop; records; safety.

MLY-202

METALLURGY

60 Hours

Physical properties of metals; crystal structure and modification; nature and behaviour of solid solutions — phase diagrams; mechanical properties of metals; production of iron and steel; types of irons and cast irons — properties and uses; plain carbon steels — properties and uses; alloy steels for use at elevated temperatures and pressures; theory and processes of heat treatment of steels; lab. experiments to compare heat treated metals; effects of cold working and welding; methods of stress relieving; detailed studies and problems concerning tension, compression, elasticity, temperature change, hydrostatic pressure, on metal parts; lab. exercises in testing metals under tension, compression, shear, torsion, endurance, and non-destructive testing; preparation and examination of specimens for microstructure and macrostructure; study of the failure of metals mechanically and chemically; recording and interpretation of data.

Structures Department

M. J. TOMLINSON, DEPARTMENT HEAD

STRUCTURAL TECHNOLOGY RECREATION FACILITY TECHNOLOGY

STRUCTURAL TECHNOLOGY

This course is designed to prepare young men for positions of leadership within the Building Industry.

A variety of positions is open to those who complete the course successfully. Graduates may become: estimators, construction superintendents, building inspectors, materials testing technologists, building products salesmen, or materials expeditors. Other areas of employment are being added constantly to the above list. One such addition is that presented in the field of construction engineering by the R.C.A.F. which offers a commission to high-quality graduates.

Prospective students who require more detailed information about the industrial opportunities for the graduates of this course may arrange by appointment, for an interview with any of the members of the Advisory Committee listed on page 55. Prospective students should note that after obtaining two years of acceptable experience in estimating, graduates of this course will be eligible for membership in the Canadian Institute of Quantity Surveyors.

Graduates of this course are eligible for membership in the Alberta Society of Engineering Technologists after two years of suitable industrial experience. Please refer to page 27 of this calendar for further information.

Admission prerequisites and enrolment regulations are given on pages 16, 17 and 22. A statement of high school results, or other documentary proof, must accompany each application.



STRUCTURAL TECHNOLOGY

Three-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

This course is designed as a continuation of the Alberta Vocational High School program. Students taking the appropriate vocational program will be expected to complete Grade XII and enter "B" year. Others may apply to enter "A" year after completion of an appropriate Grade XI program.

"A" YEAR

Subject	Unit	Hours
Structures Laboratory	ST-130	400
Materials	ST-131	65
Structural Mechanics	ST-132	30
Drafting and Shop Drawing	ST-133	200
Mathematics	MATH-130	135
Physics	PHYS-130	135
English	ENGL-130	135
Total		1100

ST-130 STRUCTURES LABORATORY 400 Hours

The use and care of hand and power tools; commercial type cabinet making; residential formwork; concrete: ingredients, mixing, testing, placing; house framing; scaffolding; elementary masonry construction; elementary foremanship; field trips.

ST-131 MATERIALS 65 Hours

Lumber; plywood; cement; brick and tile; building papers; insulations; composition boards; plaster boards; builders' hardware; wood and lumber fastening devices; exterior and interior finishes.

ST-132 STRUCTURAL MECHANICS 30 Hours

Principles of mechanics; basic structural problems; loads and reactions; moments; shear and moment diagrams; types of beams; theory of bending; shear and bending formulae; properties of sections.

ST-133 DRAFTING AND SHOP DRAWING 200 Hours

Use of drawing tools and materials; lines and lettering; scale drawing; orthographic drawing; pictorial drawing, plane geometry; dimensioning; shop drawing.

MATH-130 MATHEMATICS 135 Hours

Rational numbers; equations and inequalities; quadratic equations with rational roots; irrational numbers; functions; graphs; variations; elements of coordinate geometry; the quadratic function; equations of the second degree and their graphs; the sine and cosine functions; oblique triangles; trigonometric equations and identities; polynomials.

PHYS-130 PHYSICS 135 Hours

Mechanics: velocity and acceleration; uniformly accelerated motion; vector properties of velocity; falling bodies; Newton's laws of motion; projectiles; Newton's law of gravitation; statics equilibrium; centre of mass; friction; work; energy; power; conservation of energy; momentum; conservation of momentum.

Heat: temperature and expansion; heat capacity; changes of state; refrigeration and geysers; heat energy; gas laws: mechanical equivalent of heat.

Electricity: static electricity; Coulomb's law; charges in motion; emf; batteries; Ohm's law; series circuits; parallel circuits. Laboratory experiments are conducted for all major topics.

ENGL-130 ENGLISH 135 Hours

This course is aimed at increasing the student's interest and skill in reading, in understanding literature, and in expressing ideas clearly, accurately and effectively in speech and writing. Appropriate texts and readings will be assigned.

"B" YEAR

Subject	Unit	Hours
Structures Laboratory	ST-230	270
Materials	ST-231	90
Structural Mechanics	ST-232	30
Estimating	ST-233	90
Drawing and Sketching	DFTG-236	30
Drafting	DFTG-237	150
Mathematics	MATH-236	90
Physics	PHYS-236	60
English	ENGL-230	90
Total		900

ST-230 STRUCTURES LABORATORY 270 Hours

Use of levelling instruments; site surveying; excavation operations; foundations; formwork; concrete design and handling; industrial building erection: timber frame — including rigid frame, steel frame, reinforced concrete frame, masonry; roofing: unequal pitch, shed rafters, arches; scaffolds and hoisting towers; stairs; field trips; on-the-job training.

ST-231 MATERIALS 90 Hours

Review and assessment of ST-131: design and control of concrete mixes; concrete products; reinforcing; structural steel framework units; terra-cotta products; gypsum products; building stones; facing materials; industrial flooring materials; roofing materials; ceiling systems and materials; acoustic materials; glazing glass; industrial hardware; industrial maintenance materials; ropes and cables.

ST-232 STRUCTURAL MECHANICS 30 Hours

Review of first year's work; loads; live, dead, moving, uniformly distributed, impact; reactions; methods of analysis, problems; spans of beams, definitions, diagrams,

relations between loads, shear forces and bending moments; allowable working stress, section modules, moment tables, problems; common framed structures: wooden roof trusses, methods of analysis, stresses, problems: application and problems relating to timber floors, beams, roof trusses, columns; use of tables; details of joints, foundations; graphic statics; use of slide rule, recording of calculations.

ST-233 ESTIMATING 90 Hours

The construction company: organization charts; bidding procedures; the quantity surveyor: function; qualities; the estimator: function; qualities; use of standard estimating forms; study of frame and light masonry construction with regard to: interpretation of plans and specifications; use of estimating data; development of unit prices; calculating machine operation.

DFTG-236 DRAWING AND SKETCHING 30 Hours

Sketching equipment; technical and artistic sketching; basic strokes and line practice; tone building methods; scale and proportion; orthographic sketching methods; pictorial sketches; orthographic structural details; pictorial structural details; collecting data on sketches; developing ideas and giving instructions by sketch; preliminary sketches of buildings.

DFTG-237 DRAFTING 150 Hours

Orthographic, axonometric and oblique projections; sections and architectural conventions; blueprint reading; dimensions and notations of architectural drawings; structural details and working drawings; reproduction of drawings.

MATH-236 MATHEMATICS 90 Hours

Linear equations; equations involving logarithms; change of base; evaluations from formulae; interpolation and extrapolation; line charts; conic sections; simultaneous equations; graphical solutions; arithmetical progressions and simple interest; geometrical progressions and compound interest; mortgages; use of tables; binomial theorem; other useful series; basic trigonometry; areas and volumes.

PHYS-236 PHYSICS 60 Hours

Mechanics: comprehensive re-examination and extension of topics from year "A": vectors; force systems; first and second conditions for equilibrium; linear motion; Newton's laws; work and energy; hydrostatics; liquids at rest; pressure; buoyancy; hydraulic systems; heat: review of temperature; thermal expansion; introduction to problems of heat transfer by conduction, radiation and convection.

ENGL-230 ENGLISH 90 Hours

This course is designed to improve the student's ability to write and speak clearly, concisely and effectively. It includes a detailed study and practice of technical writing principles and style; special techniques of technical writing; types and formats of formal and informal reports; business letters and library research reports. The course also introduces the student to the principles and problems of oral reporting. Selected readings are assigned for book reports.

"C" YEAR

Subject	Unit	Hours
Structures Laboratory	ST-300	270
Materials	ST-301	90
Structural Mechanics	ST-302	30
Estimating	ST-303	90
Contracts and Specifications	ST-304	30
Mechanical Equipment Systems	ST-305	60
Structural Drafting	DFTG-304	90
Mathematics	MATH-306	90
Physics	PHYS-306	60
English	ENGL-301	90
Surveying (included with Structures Lab.)		

Total900

ST-300 STRUCTURES LABORATORY 270 Hours

Site surveying; soil analysis and testing; building layout; concrete design, with emphasis on additives and light-weight aggregates; asphalt design; form-work design; floor systems: timber; concrete; steel; wall systems: temporary closures; curtain walls; cladding; openings: roof systems: flat deck; trusses; laminated beams; folded plate; hyperbolic paraboloid; building maintenance; field trips; on-the-job training.

ST-301 MATERIALS 90 Hours

Soils: types, nature, structure, bearing qualities; glass: plate, insulating units, heat absorbing, glass blocks, armourplate doors, domes, jalousies, store fronts, cladding; steel and iron: door bucks, window frames, partitions and dividers, stairwork, cladding; aluminum: door and window frames, sash frames, store fronts, partition work, stairwork,

cladding; copper: tubing, flashing, roofing, wood: laminated beams and trusses; structural plastics: flat and corrugated sheets, moulded shapes, partitions, cladding.

ST-302 STRUCTURAL MECHANICS 30 Hours

Review of first year course; more advanced calculations and diagrams of loading, shear forces, and bending moments for simply-supported beams, cantilevers, and continuous beams; reinforced concrete design; typical slabs, beams, columns, foundations, stairs, cantilevers, retaining walls; structural steel design; standard sections and their characteristics, use of tables, selection of sections, beams, stanchions, plate girders; riveted, bolted and welded connections; steel roof truss design, details of joints.

ST-303 ESTIMATING 90 Hours

Study of heavy commercial, institutional and industrial construction with regard to: interpretation of plans and specifications, use of estimating data, development of unit prices; cost segregation methods; approximate estimating methods; earth cut-and-fill estimating; critical path method data processing.

ST-304 CONTRACTS AND SPECIFICATIONS 30 Hours

Objectives of the unit; organization of the building industry; definition of terms, personal and ethical relations in business. The owner, architect, contractor, sub-contractor; elements of contracts; standard documents of the R.A.I.C.; law, its origin, nature and development; the Canadian court system; competitive bidding and contracting procedures; advertising and letting of the contract; general conditions of the contract; preparation of specifications; technical specifications; building codes; zoning and specifications.

ST-305 MECHANICAL EQUIPMENT 60 Hours

Introduction and scope of the unit; water supply; sanitation; heating, air conditioning; electrical equipment; acoustics; field trips.

DFTG-304 STRUCTURAL DRAFTING 90 Hours

Review of projection drawing and drafting methods; reading of working drawings; details and working drawings of masonry construction; timber details and working drawings; standard practice in detailing of reinforced concrete structures; structural shop practice; drafting of working drawings.

MATH-306 MATHEMATICS 90 Hours

Theorems of Pappus for surface area and volume with applications; centroid of composite area; estimation of irregular areas and volumes by squared paper and by planimeter; the trapezoid rule; the mid-ordinate rule; Simpson's rule; prismoidal rule; further trigonometry and applications; elementary statistics in relation to strength of materials, programming, etc.; standard deviation and laminated construction; beginning calculus.

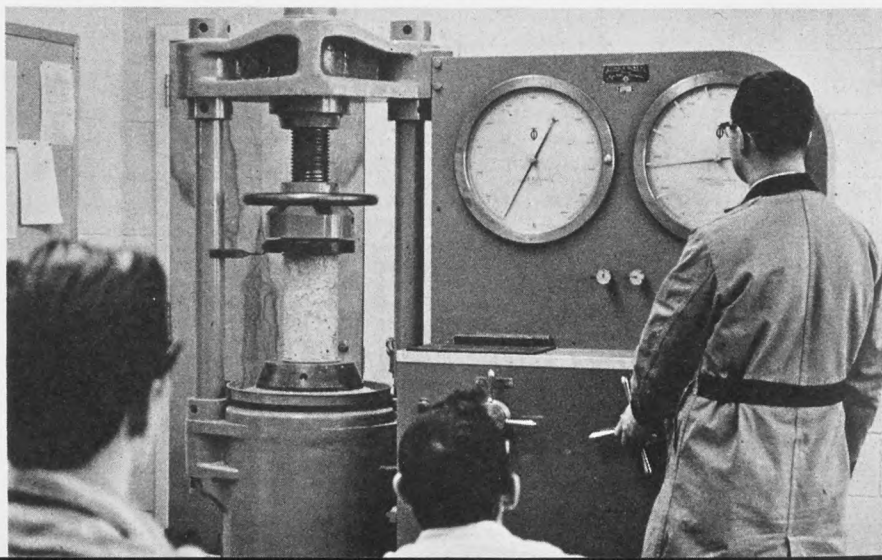
PHYS-306 PHYSICS 60 Hours

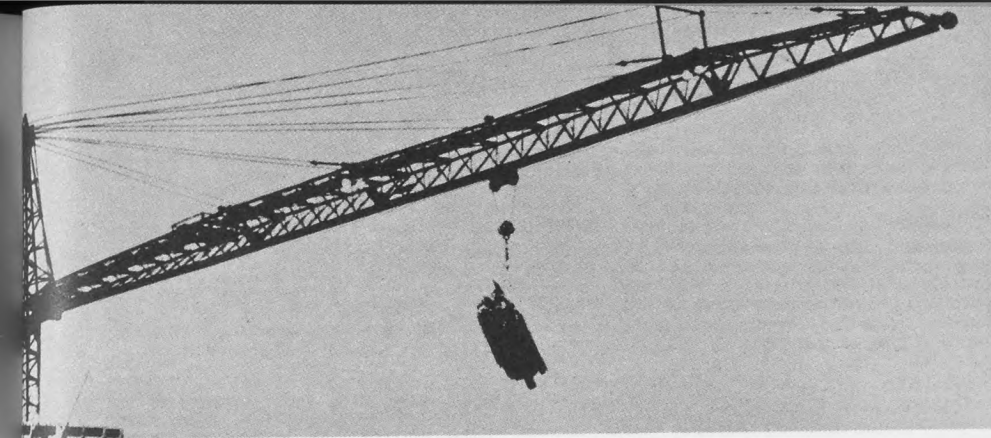
Mechanics: Rotary motion; moments of inertia; Newton's laws for angular motion; momentum; uniform circular motion; elastic properties of solids; physics of waves and vibratory motion.

Sound: sound waves; acoustics; light; nature of light, waves; rays; sources of light; illumination and photometry.

ENGL-301 ENGLISH 90 Hours

This course is aimed at improving the student's ability to reason as well as his writing, speaking, reading and listening skills. It emphasizes the principles of effective communication as applied to formal technical reports. It also includes a study of the mass media, and a study and application of the principles of public speaking; types of formal and informal speeches; and the conduct of meetings. Selected readings from various modern literary forms are assigned for analysis and evaluation.





STRUCTURAL TECHNOLOGY

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

This course is available to students who have completed Grade XII or who have 100 Alberta High School credits, with standings as shown on page 16.

FIRST YEAR

Subject	Unit	Hours
Structures Laboratory	ST-100	270
Materials	ST-102	90
Estimating	ST-103	90
Structural Mechanics	ST-106	30
Drawing and Sketching	DFTG-103	30
Drafting	DFTG-105	150
Physics	PHYS-102	60
Mathematics	MATH-102	90
English	ENGL-100	90
Total		900

ST-100 STRUCTURES LABORATORY 270 Hours

The use and care of hand and power tools; foundation layout by triangulation; residential formwork; concrete: ingredients; mixing; testing; placing; masonry: brick veneer; block foundation walls; block lintels; house framing; scaffolding; elementary foremanship; field trips for the inspection of manufacturing processes and for the inspection of constructional details.

ST-102 MATERIALS 90 Hours

Lumber; plywood; wood flooring; siding and exterior finishes; composition boards; cementitious materials: Portland cement; lime; gypsum and gypsum board products; burned-clay products; building papers and felts; thermal insulation; resilient floor coverings; glazing glass; builder's hardware and fastening devices; plastic laminates; adhesives.

ST-103 ESTIMATING 90 Hours

The construction company: organization charts; bidding procedures; the quantity surveyor: function; qualities; use of standard estimating forms; study of frame and light masonry construction with regard to: interpretation of plans and specifications; use of estimating data; development of unit prices; calculating machine operation.

ST-106 STRUCTURAL MECHANICS 30 Hours

Fundamental principles; equilibrium; loads; live; dead; moving; wind; concentrated; uniformly distributed; impact; reactions; methods of analysis; problems; shear forces and bending moments; spans of beams; definitions; diagrams; relations between loads, shear forces, and bending moments; allowable working stresses; section modulus; moment tables; problems; common framed structures: wooden roof trusses; methods of analysis; stresses; problems; application and problems related to timber floors, beams roof trusses, columns; use of tables; details of joints; foundations; simple Graphic Statics; use of slide rule; recording of calculations.

DFTG-103 DRAWING AND SKETCHING 30 Hours

Materials and equipment; technical and artistic sketching; basic strokes and line practice; tone building methods; scale and proportion; orthographic sketching methods;

axonometric and oblique sketches; orthographic structural details; pictorial structural details; collecting data on sketches; developing ideas and giving instructions by sketch; preliminary sketches of buildings.

DFTG-105 DRAFTING 150 Hours

Use and care of instruments; materials of drafting; applied geometry, freehand lettering; orthographic, axonometric and oblique projection; sections and architectural conventions; blueprint reading; dimensions and notation of architectural drawings; details of light frame construction; frame stair construction; fireplace design and working drawings; mechanical systems on architectural drawings; working drawings; reproduction of drawings.

PHYS-102 PHYSICS 60 Hours

Measurement: systems of units. Mechanics: introduction to vectors; systems of forces; torque and equilibrium; linear motion; force and motion; work and energy; fluids at rest; heat; temperature and heat; thermal expansion; change of phase; heat transfer.

MATH-102 MATHEMATICS 90 Hours

Linear equations. Simultaneous linear equations. Powers and Roots. Indices and logarithms. Equations involving logarithms. Change of base. The slide rule. Evaluations from formulae. Factorization. Rationalization. Approximation. Accuracy.

The straight line graph. Interpolation and extrapolation. The determination of laws. Reduction to straight line form. Line charts, with linear and non-linear scales. Solution of quadratic equations by factors. Completing the square. Solution by formula. Graphical solution of equations of second degree. Conic sections: parabola, ellipse and circle, hyperbola.

One second degree, one linear simultaneous equations. Simultaneous equations both of the second degree. Graphical solution of simultaneous equations. Graphical solution of cubic equations. Closer approximations to roots.

Arithmetical progressions. Simple interest: by proportion, by formula.

Geometrical progressions. Compound interest. Depreciation. Compound interest on annual instalments. Mortgages. Annuities. Use of compound interest and annuity tables.

Pascal's triangle. Expansions of $(1 + x)^n$ and $(a + x)^n$. Approximations. Application to small errors. Other useful series.

The right-angled triangle. Basic trigonometrical ratios and relationships between them. Complementary angles. The Theorem of Pythagora. Set square triangles. The solution of right-angled triangles. Gradients. Deduction of trigonometrical ratios one from the other. Angles of elevation and depression. Projection.

ENGL-100 ENGLISH 90 Hours

This is an intensive course designed to improve the students' critical thinking as well as their writing and reading skills. The course begins with instruction on how to study. It demonstrates how elementary logic, fundamental writing techniques, outlining, summarizing, paragraphing, vocabulary, grammar, spelling, capitalization and punctuation are applied to the writing of short, informal library research reports, business correspondence, and technical explanations. It also includes critical evaluations of the structure and content of published writings, especially in science and technology.

SECOND YEAR

Subject	Unit	Hours
Structures Laboratory	ST-200	270
Materials	ST-202	90
Estimating	ST-203	90
Structural Mechanics	ST-206	30
Mechanical and Electrical Equipment	ST-208	60
Contracts and Specifications	ST-209	30
Structural Drafting	DFTG-205	90
Physics	PHYS-202	60
Mathematics	MATH-202	90
English	ENGL-200	90
Total		900

ST-200 STRUCTURES LABORATORY 270 Hours

Site surveying and levelling; foundation layout by instruments; formwork for concrete structures; masonry structures: curtain walls; spandrel walls; control joints; water stops; flashings; steel structures; timber structures; shop drawing and detail sketching; foremanship: reports; time keeping; recording; job instruction; care of equipment; safety and first aid; field trips to inspect current construction and installations; in-service training.

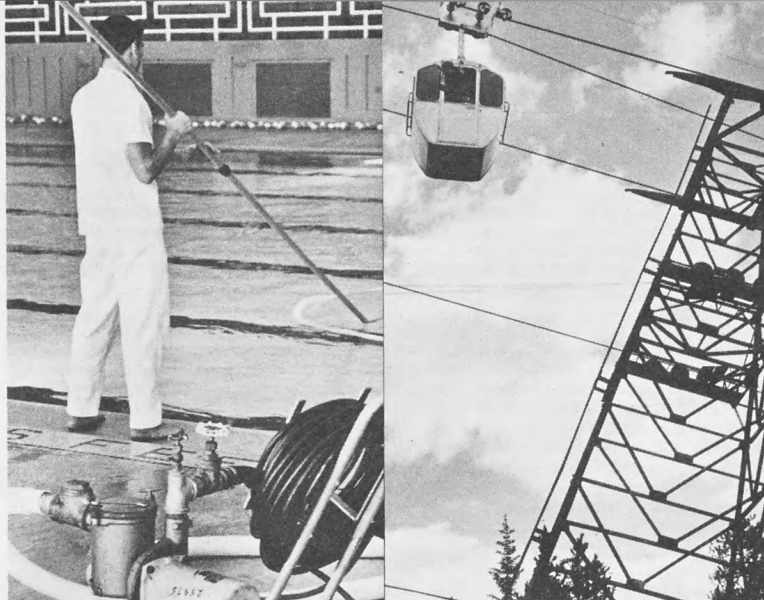
- ST-202 MATERIALS 90 Hours**
 Structural lumber: stress and appearance grading; classes and uses; glulam construction; wood preservatives and fireproofing of wood; cements; concrete: ad-mixtures; aggregates; special concretes; concrete products and reinforcing materials; structural steel units; structural clay and terra cotta products; industrial gypsum products; building stones; facing materials; industrial flooring materials; roof covering materials; ceiling systems and materials; acoustical materials; industrial glass; industrial plastics; industrial insulations; industrial hardware; industrial finishing materials; caulking compounds.
- ST-203 ESTIMATING 90 Hours**
 Study of heavy commercial, institutional and industrial construction with regard to: interpretation of plans and specifications; use of estimating data; development of unit prices; cost segregation methods; approximate estimating methods; earth cut-and-fill estimating.
- ST-206 STRUCTURAL MECHANICS 30 Hours**
 Review of first year course; advanced calculations and diagrams of loading, shear forces, and bending moments for simply-supported beams, cantilevers, and continuous beams; reinforced concrete design: typical slabs; beams; columns; foundations; stairs; cantilevers; retaining walls; structural steel design; standard sections and their characteristics; use of tables; selection of sections; beams; stanchions; plate girders; riveted, bolted and welded connections; steel roof truss design; details of joints.
- ST-208 MECHANICAL AND ELECTRICAL EQUIPMENT 60 Hours**
 Structural aspects of: water supply; distribution of hot and cold water; fire protection in buildings; sanitary drainage; sewage disposal: public and private; National Building Code, Part 7 and Supplement 4; heating systems: forced warm air; steam; hydronic; radiant panel; electric heating; air-conditioning systems: cooling by compressive refrigeration; absorption; the thermo-electric principle; the heat pump; electrical equipment; lighting fundamentals; electrical circuits; materials and installation methods; vertical transportation: passenger and freight elevators; escalators; acoustics: materials and their coefficients of transmission; amplification and absorption of sound; sound and signal systems; residential; multiple dwelling; school; office building; industrial systems; field trips.
- ST-209 CONTRACTS AND SPECIFICATIONS 30 Hours**
 Objectives of the unit; organization of the building industry; definition of terms, personal and ethical relations in business; the owner, architect, contractor, sub-contractor; elements of contracts; standard documents of the R.A.I.C. law; its origin, nature and development; the Canadian court system; competitive bidding and contracting procedures; advertising and letting of the contract; general conditions of the contract; preparation of specifications; technical specifications; building codes; zoning and specifications.
- DFTG-205 STRUCTURAL DRAFTING 90 Hours**
 Review of projection drawing and drafting methods; reading of working drawings; details and working drawings of masonry construction; timber details and working drawings; standard practice in detailing of reinforced concrete structures; structural shop practice; drafting of working drawings.
- PHYS-202 PHYSICS 60 Hours**
 Mechanics, review of torque; rotation of rigid bodies; uniform circular motion; elastic properties of solids; sound: wave motion; sound waves; acoustics; light; illumination.
- MATH-202 MATHEMATICS 90 Hours**
 Basic trigonometry; solution of right angled triangles with applications; deduction of trigonometric ratios; angles of any magnitude; graphs of trigonometric functions; inverse ratios; solution of basic trigonometric equations; circular measure. Areas of triangles, irregular polygons, sectors and segments; area and perimeter of the ellipse; tables of areas and volumes for regular solids. Theorems of Pappus for surface area and volumes, with applications. Centroid of composite area. Trigonometric addition formulae; double angle, half angle and product formulae; trigonometric identities; further solution of trigonometric equations. Complete solution of oblique triangles by slide rule and logarithms. Further trigonometry, height of an inaccessible object; three dimensional problems with applications; line of greatest slope. Applied statistics; charts; distribution curves; standard deviation; application of the normal curve. An introduction to the principles of applied calculus may be offered.
- ENGL-200 ENGLISH 90 Hours**
 This is an intensive course which aims to improve students' critical faculties as well as their writing, speaking, and reading skills. The course begins with a review of library research reports, business correspondence, and technical explanations. It includes study of the larger elements of report writing, methods of gathering report data, formal and informal report formats, and the uses of different types of reports — with emphasis on the formal technical report. It also includes a study of the organization and delivery of short speeches (including technical talks) and the conduct of business meetings. The structure and content of published writings, mostly in science and technology are analyzed and evaluated. Selected readings are also assigned for book reports and class discussions.

RECREATION FACILITY TECHNOLOGY

This course will provide education and training in the theory and practice of operating, servicing and planning recreation facilities. The course also includes the development of supervisory skills, but does not deal with the administrative or programming aspects of the field.

As a specialist in the field of recreation facilities, the technologist takes his place alongside administrative and program personnel as a member of the recreation team. He is capable of assuming responsibility for the operation of highly specialized and often complex recreation facilities. He is concerned with preventive maintenance, but also has an appreciation of the architectural and engineering aspects of facility planning.

The prerequisites for admission and the enrolment regulations are given on pages 16 and 22. A statement of high school results or other documentary proof, must accompany each application.



RECREATION FACILITY TECHNOLOGY

Two-Year Course

September 1967 to May 1968

Fee for each year is \$60.00 plus Registration Fee of \$5.00.

FIRST YEAR		
Subject	Unit	Hours
Safety and Health Standards and First Aid Procedures	RT-101	60
Orientation for Recreation and Physical Education	RT-102	60
Ice Making and Maintenance	RT-110	60
Turf Construction and Maintenance	RT-111	120
Operation and Maintenance of Swimming Pools	RT-112	60
Maintenance of Outdoor Recreation Facilities	RT-113	90
Mechanical Room Maintenance	PET-106	90
Drafting and Surveying	SVT-108	90
English	ENGL-101	60
Mathematics	MATH-119	120
Chemistry	CHEM-107	90
Total		900

RT-101 SAFETY AND HEALTH STANDARDS AND FIRST AID PROCEDURES 60 Hours

Safety Regulations and standards for recreation places, with emphasis on problems of special concern to the maintenance person; review Board of Health regulations, where applicable; first aid procedures; prevention of athletic injuries; development of a safety attitude; fire prevention and emergency procedures.

RT-102 ORIENTATION FOR RECREATION AND PHYSICAL EDUCATION 60 Hours

To provide the recreation facility technician with an essential understanding of the principles and objectives of recreation and physical education; his function as a member of a team responsible for achieving these objectives; duties and special qualifications of other members of this team; the role of public, private and commercial agencies; an introduction to scheduling, tournament organization, the conduct of meets; use and maintenance of audio-visual aids and materials; operation of the public address system.

RT-110 ICE MAKING AND MAINTENANCE 60 Hours

Components of the ice-making plant:—compressors, evaporators, condensers, oil separators, brine coolers, piping, control valves; refrigerants:—ammonia R-12, R-22; automatic controls:—reverse acting high pressure cutouts, thermostats oil failure switches, time-delay relays, low and high pressure cutouts; principles of heat transfer; routine testing and maintenance procedures; closing down and starting up routines; sub-grade structure for sand fill and permanent floors, ice-making; painting; washing; ice-making machinery:—use and maintenance.

TURF CONSTRUCTION AND MAINTENANCE, LABORATORY AND THEORY			120 Hours
RT-111	Construction and efficient maintenance practices for Northern Belt turfs; facilities to be studied include: football fields, bowling greens, golf course fairways and greens, park areas, tennis courts (grass), outfields. Introduction to engineering factors such as sub-grade, grading and drainage; surface and underground watering systems; servicing and repair of maintenance equipment.		
RT-112	OPERATION AND MAINTENANCE OF SWIMMING POOLS		60 Hours
	Principles underlying proper practices in maintaining safe and healthful swimming pools; components of the swimming pool plant, with particular emphasis on maintenance procedures, and repair where applicable; characteristics of commonly used disinfectants and chemicals; an appreciation of pool design and construction.		
RT-113	MAINTENANCE OF OUTDOOR RECREATION FACILITIES		90 Hours
	Proper maintenance practices for baseball and fastball diamonds, tennis courts (clay, grit, all-weather composition, fast-drying and concrete), track and field facilities, hockey rinks, winter sports facilities, playgrounds, etc. Introduction to engineering factors such as subgrade, grading and drainage for specific facilities.		
PET-106	MECHANICAL ROOM MAINTENANCE		90 Hours
	Basic principles of construction, operation and maintenance of low pressure boilers; pump construction and overhaul; types and uses of valves, construction details, repair methods; heating and ventilation:—operating principles of system components; introduction to the basic principles of automatic control and automation; water heaters, water softeners and other equipment.		
SVT-108	DRAFTING AND SURVEYING		90 Hours
	Reading and interpreting working drawings and specifications of recreation and sports facilities; basic theories such as sketching, reading of scale, sectioning principles, and dimensioning procedures; introduction to topographical drafting and its uses; plotting traverses and angles; purposes and use of basic surveying equipment (level, transit, builder's transit); layout of playing fields and areas from plans using surveying instruments; standards and specifications for recreation and sports facilities.		
ENGL-101	ENGLISH		60 Hours
	This course is designed to improve the student's ability to write and speak clearly, concisely and effectively; detailed study and practice of technical writing principles and style; special techniques of technical writing; types and formats of formal and informal reports; principles and problems of oral reporting. Selected readings in recreation will be assigned.		
MATH-119	MATHEMATICS		120 Hours
	Use of geometrical instruments; triangles and polygons; congruent and similar triangles, mensuration; mid-ordinate rule; graphs; interpolation; parabola; rectangular hyperbola; cubic curves; volumes; surface area; frusta; spheres; trigonometric functions; identities; heights and distances; radian measure; solution of triangles; use of logarithms; areas, simple interest; compound interest; equivalence; annuities; amortization; sinking funds; depreciation.		
CHEM-107	CHEMISTRY		90 Hours
	Origin and classification of soils; physical and chemical properties of soils; soil organisms; conservation and maintenance of soils; soil deficiencies and determination of nutrient requirements of plants; essential requirements of fertilizers; fertilizers carrying the secondary essential elements; principles and practices of liming; weed control; properties and functions of herbicides; turf diseases; water sampling, treatment and analysis; definition, determination and significance of pH; causes and prevention of corrosion; chemistry of water softening.		

SECOND YEAR

Subject	Unit	Hours
Facility Management and Procedures	RT-201	90
Building Maintenance and Sanitation	RT-210	60
Equipment Installation, Maintenance and Repair ..	RT-211	60
Maintenance of Camp and Waterfront Facilities ...	RT-212	60
On-the-Job Training and Technical Discussions	RT-213	120
Building Techniques, Lab and Theory	ST-240	120
Materials Lab and Theory	ST-241	60
Electrical Fundamentals and Illumination Standards	ET-204	60
Human Relations and Principles of Supervision	BA-263	90
English	ENGL-201	60
Physics	PHYS-215	120
Total		900

- RT-201 FACILITY MANAGEMENT AND PROCEDURES 90 Hours**
Practices and procedures in the operation and management of recreation and sports facilities; cash controls; traffic control; purchasing procedures; budgeting; vending machines and food concessions; contracts and other legal aspects.
- RT-210 BUILDING MAINTENANCE AND SANITATION 60 Hours**
Maintenance and sanitation problems encountered in buildings housing recreation facilities; various types of interior and exterior building surfaces; wooden gymnasium floors and bowling alleys will receive special emphasis; maintenance of plumbing fixtures such as shower heads and toilets; maintenance of locks and lockers.
- RT-211 EQUIPMENT INSTALLATION, MAINTENANCE AND REPAIR 60 Hours**
Installation, preventive maintenance and repair of all types of recreation equipment, playground equipment and apparatus; storage methods; space requirements for storage facilities and fixtures; equipment identification and inventory systems; equipment checkout and control systems.
- RT-212 MAINTENANCE OF CAMPS AND WATERFRONT FACILITIES 60 Hours**
The maintenance of waterfront facilities at summer camps and marinas; types of docks and floats and the details of their construction; maintenance of boats of various types and manufacture; waterfront layouts; sanitation and safety standards; waterfront erosion; flood control.
- RT-213 ON-THE-JOB TRAINING AND TECHNICAL DISCUSSIONS 120 Hours**
On-the-job training will be provided by public and private agencies and will be supervised by senior personnel; written and oral reports to be submitted on each assignment. Latest trends in maintenance methods and materials will be reviewed by personnel in related industries; problems encountered in on-the-job training will be discussed.
- ST-240 BUILDING TECHNIQUES LABORATORY AND THEORY 120 Hours**
Basic techniques and information regarding certain phases of building construction of various materials with particular emphasis on wood camp and resort buildings; an appreciation of correct location of buildings on the site; instruction in the bearing qualities of soils, and types of equipment best suited to work the site; estimating material costs; suitability of materials for the project, and local site; a sound background in concrete work, such as footings, foundation walls and forming, septic tanks, water tanks, concrete properties — mixing, placing, etc.; quantity and cost estimating; project scheduling (from initiation to completion); building maintenance and repairs — techniques, as well as costing and scheduling.
- ST-241 MATERIALS LABORATORY AND THEORY 60 Hours**
The study of common materials and their characteristics; the use and maintenance of related tools and equipment; the use of related measuring instruments; the lay-out techniques; the modification of the materials' properties by lamination, heat or cold treatment; and the application of the use of these materials in recreation equipment.
- ET-204 ELECTRICAL FUNDAMENTALS AND ILLUMINATION STANDARDS 60 Hours**
Basic concepts pertaining to voltage, current, resistance, impedance, power, energy, frequency; Ohm's law; series and parallel circuits, d-c power, power formulae; care and maintenance of electrical motors; mention of Canadian Electrical Code in stressing safety precautions in handling electrical equipment and circuits and determining conductor sizes, etc.; illumination standards for recreation and sports facilities, use of the light meter; emergency measures.
- BA-263 HUMAN RELATIONS AND PRINCIPLES OF SUPERVISION 90 Hours**
Designed to prepare the recreation facility technician for responsibilities in dealing with the public and for supervisory responsibilities. Introduction to individual and group dynamics; basic needs and patterns of behaviour of individuals at different age levels; techniques of leadership and foremanship; scheduled seminars in philosophy and communications.
- ENGL-201 ENGLISH 60 Hours**
Aimed at improving the student's ability to reason as well as his writing, speaking and listening skills; emphasis on the principles of effective communication as applied to formal technical reports; study of mass media; study and application of the principles of public speaking, types of formal and informal speeches, and the conduct of meetings. Selected readings are assigned for analysis and evaluation.
- PHYS-215 PHYSICS 120 Hours**
A thorough review of Mechanics followed by material that will have a direct application to the field of recreation maintenance. Main topics to be studied are: some basic concepts; forces; concurrent coplanar forces; nonconcurrent coplanar forces; friction; motion — linear; work, energy, power; liquids; buoyancy and viscosity; submerged surfaces; liquids — motion; liquids — measurement; the expansion of solids and liquids; specific heat — heat transfer; gases; P-V Diagrams.

EVENING COURSES

For the benefit of adults in Calgary and district the Institute provides an extensive program of Evening Courses. These usually are operated one or two evenings per week from mid-September until April. Before any class is organized there must be a minimum enrolment of fifteen students.

For complete details, consult the Evening Course Calendar which is obtainable by telephoning 289-2244, or 282-7222.

CORRESPONDENCE COURSES

Under the Canadian Technical and Vocational Course Agreement, the Institute offers the home study courses listed below. These courses are endorsed by the Institute of Power Engineers as the recommended courses for steam engineers across Canada. Provincial Boiler Inspectors have been high in their praise of these courses as a means of upgrading men employed in power plants.

- Power Engineering — First Class (Fee: \$50.00).
- Power Engineering — Second Class (Fee: \$40.00).
- Power Engineering — Third Class (Fee: \$25.00).
- Power Engineering — Fourth Class (Fee: \$15.00).

Automatic Contros—Section 1	\$25.00
Section 2	\$15.00
Section 3	\$20.00

Dietary Service Training — available Fall, 1967

Practical Mathematics (applicable to all technical trades) — (Fee: \$15.00.).

SEWING CRAFTS

OBJECTIVES:

This course is offered primarily to homemakers who wish to improve their ability to sew. This ability may be extended in one or more of the following: dressmaking, drapes tailoring, fitting, and alterations.

The aim of the dressmaking program is to develop the students' interests in making clothing and to teach them to construct attractive clothes in minimum time. This is largely achieved by adapting short cuts of the garment industry to home sewing.

The course specializes in the Bishop Method of sewing. Each student begins at the basic dressmaking level in the first year and proceeds to the intermediate and advanced levels in the following two years.

Classes receive instruction in sewing machine care and operation, the use of certain attachments, selection of appropriate fabrics, preparation of material, cutting out garments, and fitting of a kind appropriate to the level of training.

All work is normally done in class. Home sewing (under special circumstances) must be approved by the Supervisor.

First Year — BASIC DRESSMAKING — 150 Hours

Second Year — INTERMEDIATE DRESSMAKING — 150 Hours

Third Year — ADVANCED DRESSMAKING — 150 Hours

NOTE: This course is inadequate in itself to prepare people to take employment in any of the above mentioned lines which involve the craft of sewing.



Admission prerequisites and enrolment regulations are given on page 19.

Full particulars are available from the Registrar, either by mail or by telephoning 289-4916.

DRESSMAKING

BASIC DRESSMAKING

150 Hours

In this basic course, the proper preparation of fabrics, accurate cutting of patterns, and quick, accurate sewing procedures are stressed. All projects are appropriate to the level of instruction and will include a cotton basic dress, woolen gusset dress and a shirtwaist dress.

INTERMEDIATE DRESSMAKING

150 Hours

In this course, advanced fitting instruction is included, and stress is laid on correct finishing.

Projects:

1. Muslin garment of pattern to be used for final project.
2. Dress—from altered pattern (basic).
3. Shift altered from basic pattern.
4. Coat, if the student is considered sufficiently able by her instructor, and if not, other projects will be advised.

ADVANCED DRESSMAKING

150 Hours

Coat or Suit. Advanced techniques on lining and finishing; using the basic pattern, drapery and quilted bedspreads, etc.

KEY TO COURSES

"AET"	— Aeronautical Engineering Technology	"HMA"	— Hotel, Motel and Restaurant Administration
"AGM"	— Agricultural Mechanics	"IWP"	— Ironworker Apprentice
"ACT"	— Air Conditioning and Refrigeration Technology	"JA"	— Journalism Administration
"AMT"	— Aircraft Maintenance Technology	"LA"	— Library Arts
"ASP"	— Appliance Serviceman Apprentice	"MAP"	— Machinist Apprentice
"AT"	— Architectural Technology	"MT"	— Manufacturing Technology
"ATD"	— Architectural Technology and Drafting Technology (combined year)	"MDT"	— Mechanical Design Technology
"A"	— Art	"MHTC"	— Mechanical Technology
"ABP"	— Autobody Mechanic Apprentice	"MLT"	— Medical Laboratory Technology
"AST"	— Automotive Service Technology	"MA"	— Merchandising Administration
"BCT"	— Biochemical Technology	"MMP"	— Motor Mechanic Apprentice
"BA"	— Business Administration	"PMP"	— Partsman Apprentice
"CPP"	— Carpenter Apprentice	"PT"	— Petroleum Technology
"COT"	— Chemical Operations Technology	"PLT"	— Planning Technology (Urban and Regional)
"CHT"	— Chemical Technology	"PBP"	— Plumber Apprentice
"CB"	— Commercial Baking	"PET"	— Power Engineering Technology
"CC"	— Commercial Cooking	"RTP"	— Radio, Television Technician Apprentice
"CMP"	— Communication Electrician Apprentice	"RT"	— Recreation Facility Technology
"CT"	— Computer Technology	"RFP"	— Refrigeration Mechanic Apprentice
"CEP"	— Construction Electrician Apprentice	"ROP"	— Roofer Apprentice
"DM"	— Diesel Mechanics	"SA"	— Secretarial Arts
"DST"	— Dietary Service Technology	"SMP"	— Sheet Metal Mechanic Apprentice
"DRS"	— Dining Room Service	"SOC"	— Short Order Cooking
"DT"	— Drafting Technology	"ST"	— Structural Technology
"ET"	— Electrical Technology	"SVT"	— Surveying Technology
"ENT"	— Electronic Technology	"TET"	— Telecommunication Technology
"GWP"	— Glassworker Apprentice	"TV"	— Television, Stage and Radio Arts
"GA"	— Graphic Arts Administration	"W"	— Welding
"HDP"	— Heavy Duty Mechanic Apprentice	"WEP"	— Welder Apprentice

LEGEND

MAIN BUILDING

General Office
Auditorium
Evening Courses
Correspondence Dept.
Duplicating Services
Lunch Room and Snack Bar
Registrar's Office

"A" BUILDING

Auto Body Shop
Air Conditioning and Refrigeration
Petroleum Labs
Electrical Dept.
Machine Shops
Main Stores
Plumbing and Gasfitting
Sheet Metal

"B" BUILDING

Structures Dept.
Automotive Dept.

"D" BUILDING

Power Engineering
Diesel and Agricultural Mechanics
Welding

TOWER BUILDING

Tower:
Administration Offices
Business Education Department
Library

MATHEMATICS—ENGLISH WING

Related Mathematics
Communication Arts Department

CHEMISTRY WING

Chemistry Department
Health Service Courses
Television Stage and Radio Arts

DRAFTING WING

Drafting Department
Graphic Arts Administration

PHYSICS WING

Computer Courses
Data Processing Centre
Related Physics Courses

EAST BLOCK

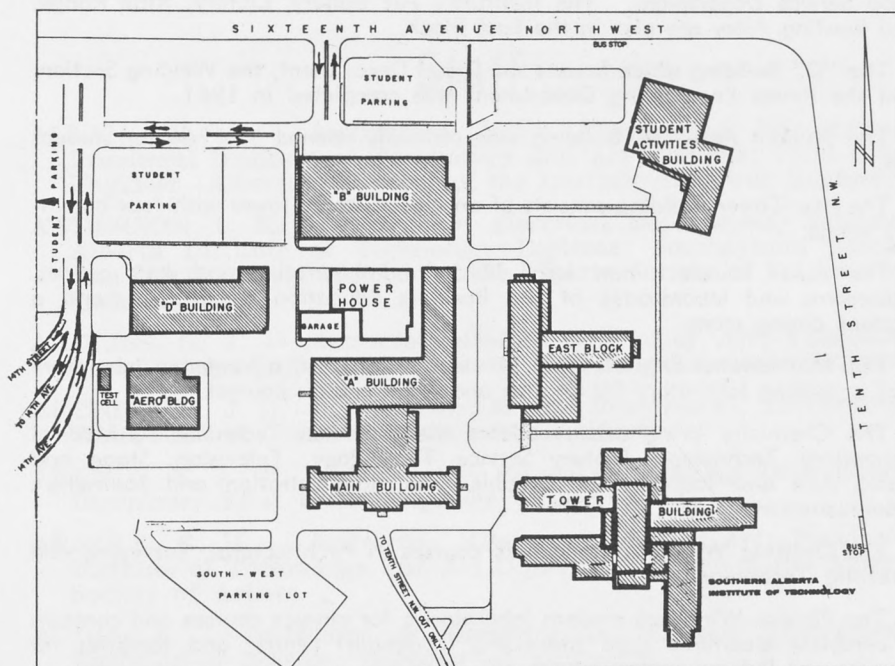
Alberta College of Art
Art Gallery
Book Store
Electronics Dept.
Food Service Dept.
Cafeteria and Coffee Shop
Rifle Range
Bowling Alleys

STUDENT ACTIVITIES BUILDING

Auditorium-Gymnasium
Recreation Room
Lounges
Student Executive Offices
Amateur Radio Station
Photography Dark Room
Year Book and School Newspaper Office

AERO BUILDING

Aeronautics Labs. and Shops



THE INSTITUTE BUILDINGS

Founded in 1916 as the Provincial Institute of Technology and Art, the Institute was first housed in temporary quarters in East Calgary. That first year, five students attended classes taught by seven instructors. Since then more than 140,000 students have enrolled at the Institute.

By 1921, however, the demand for technical education was great enough to warrant permanent and larger quarters, so, in that year, the corner stone was laid for the Education Building which officially opened in 1922.

In 1926 the "A" Building was constructed and additions were made in 1928, and 1950. It houses the classrooms, laboratories, and shops for Mechanical Technology, Electrical Technology, Refrigeration and Air Conditioning Technology, and part of the Automotive Service Department.

The remaining sections of the Automotive Department, as well as all of the Structures Department, are in the "B" Building which was constructed in 1952 with an addition in 1958.

The "East Block" was erected in 1958. In this building are the Electronics Department, the Alberta College of Art, the Drafting Department, and the Food Service Department. The Institute's Art Gallery, Library, Rifle Range, and Bowling Alley are also in the East Block.

The "D" Building which houses the Diesel Department, the Welding Section, and the Power Engineering Department was completed in 1961.

The Student Activities Building was officially opened in 1964 for student use.

The new Tower Building consists of an eleven-storey tower with four adjoining wings.

The tower houses a new large library, administration and staff offices, classrooms and laboratories of the Business Education Department, and a student dining room.

The Mathematics-English Wing provides classrooms, a language laboratory and a reading laboratory for English and Mathematics courses.

The Chemistry Wing accommodates the Chemical Technologies, Medical Laboratory Technology, Dietary Service Technology, Television, Stage and Radio Arts and facilities for Graphic Arts Administration and Journalism Administration.

The Drafting Wing accommodates courses in Architectural, Surveying and Drafting Technologies.

The Physics Wing has modern laboratories for physics courses and contains a complete electronic data processing (computer) centre, and facilities for Commercial Baking courses.

Staff

- ALLAN, W. A. — *Instructor, Power Engineering Department; Provincial Institute of Technology and Art Diploma; First Class Engineer (Alberta); Member of the Institute of Power Engineers.*
- ANDERSON, L. R. — *Instructor, Electrical Department; Southern Alberta Institute of Technology Diploma; Journeyman Electrician (First Class); Member of the Alberta Society of Engineering Technologists.*
- ANGLISS, G. J. — *Instructor, Alberta College of Art; Vancouver School of Art Diploma; Member of the Alberta Society of Artists.*
- ARCHIBALD, J. R. — *Instructor, Metals Department; Journeyman Welder (First Class) Pressure "B" Certificate.*
- ARENDS, E. J. W. — *Instructor, Power Engineering Department; Ingenieur; First Class Engineer (Alberta).*
- ARNOLD, G. H. — *Instructor, Alberta College of Art; Provincial Institute of Technology and Art Diploma; Member of the Alberta Society of Artists.*
- AUDIA, A. — *Instructor, Mathematics and Physics Department; Bachelor of Science; Bachelor of Education.*

- BARBAZA, W. — *Instructor, Business Education Department; Ryerson Institute of Technology Diploma.*
- BELL, J. M. — *Instructor, Communication Arts Department; Bachelor of Arts.*
- BEWELL, C. E. — *Instructor, Mathematics and Physics Department; Bachelor of Science; Professional Engineer.*
- BLODGETT, S. E. — *Senior Instructor, Alberta College of Art; Provincial Institute of Technology and Art Diploma; Member of the Alberta Society of Artists.*
- BLUM, G. A. — *Instructor, Drafting Department; Bachelor of Architecture; Member of the Royal Architectural Institute of Canada.*
- BREWSTER, C. W. — *Head, Mathematics and Physics Department; Bachelor of Science (Honors).*
- BRISCOE, R. G. — *Instructor, Metals Department; Journeyman Plumber and Gasfitter.*
- BROMLEY, A. H. — *Instructor, Electrical Department; Journeyman Electrician (First Class); Master's Certificate; Member of the Alberta Society of Engineering Technologists.*
- BROOK, W. J. — *Instructor, Electronics Department; Bachelor of Science.*
- BROWN, R. A. — *Senior Instructor, Electrical Department; Southern Alberta Institute of Technology Diploma; Alberta Schools of Agriculture Diploma; Associate Member of the Institute of Electrical and Electronic Engineers; Member of the Alberta Society of Engineering Technologists.*
- BUCKLEY, S. J. — *Instructor, Mathematics and Physics Department; Bachelor of Arts; Bachelor of Arts and Science; Bachelor of Education.*
- BULL, W. H. — *Instructor, Diesel Department; Southern Alberta Institute of Technology Diploma; Journeyman Heavy Duty Mechanic; Journeyman Motor Mechanic.*
- BULLAS, A. W. D. — *Instructor, Metals Department; Journeyman Sheet Metal Mechanic; National Warm Air Heating and Cooling Certificate.*
- BUNN, E. R. — *Instructor, Drafting Department; Bachelor of Applied Science.*
- BUSH, C. A. — *Instructor, Automotive Department; Journeyman Motor Mechanic; Southern Alberta Institute of Technology Diploma.*
- BUTTLE, A. J. — *Co-ordinator of Student Activities; Bachelor of Science (Physical Education).*
- CAMPBELL, A. — *Instructor, Drafting Department; Engineering Technologist; Member of Alberta Society of Engineering Technologists.*
- CAMPBELL, W. — *Senior Instructor, Automotive Department; Journeyman Motor Mechanic.*
- CARON, L. V. — *Instructor, Electronics Department; Provincial Institute of Technology and Art Diploma.*

- CEBULIAK, S. E. — *Instructor, Electronics Department.*
- CLARK, J. K. — *Senior Instructor, Electronics Department; Journeyman Communication Technician; Member of the Alberta Society of Engineering Technologists.*
- CLARKE, D. A. — *Head, Chemistry Department; Bachelor of Science (Chemical Engineering); Member of the Chemical Institute of Canada.*
- CLARKE, W. G. — *Section Head, Communication Arts Department; Bachelor of Arts.*
- COBURN, G. S. (C.D.) — *Instructor, Electronics Department; Member of the Institute of Electrical and Electronic Engineers; Member of the Alberta Society of Engineering Technologists.*
- COLLIE, C. S. — *Instructor, Business Education Department; Bachelor of Science in Business Administration.*
- COLLIN, T. J. — *Instructor, Mathematics and Physics Department; Bachelor of Science; Alberta Professional Teaching Certificate.*
- COOPER, J. P. — *Instructor, Business Education Department; Bachelor of Science; Chartered Accountant.*
- CORNETT-CHING, F. C. — *Senior Instructor, Chemistry Department; Bachelor of Science; Member of the Chemical Institute of Canada.*
- CORNISH, R. W. — *Instructor, Business Education Department; Ryerson Institute of Technology Diploma.*
- COY, N. J. — *Instructor, Drafting Department; Provincial Institute of Technology and Art Diploma.*
- CRAIGMILE, H. J. — *Instructor, Metals Department; Journeyman Machinist.*
- CULLEN, R. A. — *Senior Instructor, Chemistry Department; Bachelor of Science (Chemical Engineering); Member of the Chemical Institute of Canada.*
- CUNNINGHAM, M. W. — *Head, Communication Arts Department; Information Officer; Bachelor of Arts.*
- DANE, H. J. — *Instructor, Food Service Department; Southern Alberta Institute of Technology Diploma; Journeyman Cook; Member of the Academy of Chefs; Charter Member of the Canadian Federation of Chefs de Cuisine.*
- DAUNAIS, M. D. — *Instructor, Electrical Department; Bachelor of Applied Science in Electrical Engineering; Professional Engineer; Member of Engineering Institute of Canada.*
- DAVIES, Mrs. I. G. — *Instructor, Sewing Crafts.*
- DAY, A. — *Instructor, Automotive Department; Provincial Institute of Technology and Art Diploma; Journeyman Motor Mechanic.*
- DIRK, J. M. — *Instructor, Electrical Department; Southern Alberta Institute of Technology Diploma.*
- DODD, C. L. — *Instructor, Electronics Department; Bachelor of Science; Member of the Institute of Electrical and Electronic Engineers.*

- DOWAN, W. M. — *Instructor, Communication Arts Department; Bachelor of Arts.*
- DROHAN, W. — *Instructor, Alberta College of Art; Provincial Institute of Technology and Art Diploma.*
- DUCE, G. W. — *Instructor, Structural Department; Southern Alberta Institute of Technology Diploma; Journeyman Carpenter.*
- DUCKWORTH, W. C. — *Instructor, Aeronautical and Mechanical Department; Aircraft Maintenance Engineer "A," "B;" Associate of the Society of Licensed Aircraft Engineers and Technologists.*
- DUKE, W. G. — *Instructor, Electrical Department; Provincial Institute of Technology and Art Diploma; Journeyman Electrician (First Class); Master's Certificate; Member of the Alberta Society of Engineering Technologists.*
- DUL, J. J. — *Instructor, Electronics Department; Southern Alberta Institute of Technology Diploma.*
- EARL, R. D. — *Instructor, Mathematics and Physics Department; Bachelor of Science.*
- EDWARDS, F. W. — *Head, Metals Department; Ordinary National Certificate; Southern Alberta Institute of Technology Diploma; Journeyman Machinist; Associate Member of the Institute of British Foundrymen; Member of the Alberta Society of Engineering Technologists.*
- ELLISON, A. H. — *Instructor, Petroleum Technology; Bachelor of Science (Geology); Member of the Alberta Society of Petroleum Geologists; Member of the American Association of Petroleum Geologists.*
- ERHARDT, R. — *Instructor, Mathematics and Physics Department; Bachelor of Science in Engineering; Associate Member of the Engineering Institute of Canada.*
- ESLER, J. K. — *Instructor, Alberta College of Art; Bachelor of Fine Art; Bachelor of Education; Member of the Manitoba Society of Artists; Member of the Canadian Society of Graphic Artists.*
- EWASHEN, W. M. — *Instructor, Metals Department; Journeyman Welder.*
- FISHER, R. S. — *Instructor, Electrical Department; Journeyman Refrigeration Mechanic.*
- FITZGERALD, T. A. — *Instructor, Metals Department; Machinist Journeyman Certificate.*
- FLEMING, D. C. — *Principal; Bachelor of Science.*
- FORSTER, E. W. — *Instructor, Electrical Department; Journeyman Electrician; Member of the Alberta Society of Engineering Technologists; Member of the Institute of Electrical and Electronic Engineers.*
- FORSTER, F. G. — *Instructor, Mathematics and Physics Department; Journeyman Motor Mechanic; Member of the Society of Automotive Engineers.*
- FOSTER, Miss V. A. — *Instructor, Alberta College of Art; Southern Alberta Institute of Technology Diploma (Honors Art).*

- FREIGHT, N. — *Senior Instructor, Power Engineering Department*; First Class Engineer (Alberta); Associate Member of the Institute of Electrical Engineers; Member of the Engineering Institute of Canada; Member of the Institute of Marine Engineers.
- FRYER, L. — *Senior Instructor, Metals Department*; Journeyman Machinist; Member of the Alberta Society of Engineering Technologists; Member of the Institute of Industrial Technicians.
- GADESKI, S. — *Instructor, Diesel Department*; Southern Alberta Institute of Technology Diploma; Journeyman Motor Mechanic.
- GARDINER, A. — *Instructor, Metals Department*; Journeyman Plumber and Gasfitter.
- GARDNER, D. — *Head, Electrical Department*; Bachelor of Science; Professional Engineer; Member of the Engineering Institute of Canada.
- GAUDETTE, D. A. — *Instructor, Mathematics and Physics Department*; Bachelor of Science; Bachelor of Education.
- GAVEL, L. S. — *Instructor, Metals Department*; Southern Alberta Institute of Technology Diploma; Journeyman Welder (First Class), Pressure "B" Certificate.
- GISLASON, P. B. — *Instructor, Mathematics and Physics Department*; Bachelor of Arts; Bachelor of Science in Agriculture.
- GLOER, A. E. — *Chief Librarian*; Bachelor of Arts; Master of Librarianship; Radio and Television Institute Radio Servicing Diploma; Bachelor of Theology.
- GOODE, L. C. (C.D.) — *Senior Instructor, Drafting Department*; Provincial Institute of Technology and Art Diploma; Bachelor of Education.
- GORDON, A. B. — *Senior Instructor, Automotive Department*; Provincial Institute of Technology and Art Diploma; Journeyman Motor Mechanic.
- GORITZ, J. — *Instructor, Mathematics and Physics Department*; Bachelor of Arts (Physics).
- GOWANS, B. W. — *Instructor, Mathematics and Physics Department*; Bachelor of Applied Science; Master of Applied Science; Member of Canadian Aeronautics and Space Institute.
- GRAY, L. C. A. — *Instructor, Electronics Department*; Journeyman Communication Technician.
- GREEN, S. N. — *Senior Instructor, Aeronautical and Mechanical Department*; Aircraft Maintenance Engineer, "A," "B," "D" (all types).
- GREENHALGH, M. — *Instructor, Metals Department*; Journeyman Machinist, Member of Alberta Society of Engineering Technologists.
- GREENWOOD, G. P. — *Senior Instructor, Food Services Department*; Journeyman Cook; Member of The Academy of Chefs; Southern Alberta Institute of Technology Diploma.
- GREGSON, A. J. — *Instructor, Metals Department*; Journeyman Machinist.

- GRIFFIN, F. A. — *Instructor, Metals Department*; Southern Alberta Institute of Technology Diploma; Journeyman Welder (First Class), Pressure "B" Certificate.
- HAINES, R. E. — *Instructor, Automotive Department*; Southern Alberta Institute of Technology Diploma; Journeyman Motor Mechanic.
- HANNON, S. J. — *Head, Diesel Department*; Bachelor of Science (Agriculture).
- HARE, G. H. — *Academic Vice-Principal*; Bachelor of Education; Journeyman Machinist.
- HARRINGTON, C. A. — *Head, Business Education Department*; Bachelor of Arts in Business Administration.
- HARRON, J. D. — *Senior Instructor, Metals Department*; Journeyman Sheet Metal Mechanic; National Warm Air Heating and Cooling Certificate.
- HILTERMANN, H. W. — *Part-time Instructor, Structures Department*.
- HOLLINGSHEAD, L. — *Instructor, Chemistry Department*; Bachelor of Science in Chemical Engineering (Honours); Member of the Chemical Institute of Canada; Member of the American Chemical Society.
- HOLLINGWORTH, C. J. — *Instructor, Electrical Department*; Provincial Institute of Technology and Art Diploma; Journeyman Electrician (First Class); Journeyman Shop Electrician.
- HOLMSTEN, O. — *Instructor, Alberta College of Art*.
- HONKALA, T. L. — *Instructor, Structural Technology*; Bachelor of Education.
- HOPPS, J. E. — *Instructor, Electronics Department*; Journeyman Radio and Television Technician.
- HOUSDORFF, W. — *Instructor, Metals Department*; Journeyman Welder; Member of American Society of Metals.
- HOWARTH, G. R. — *Head, Drafting Department*; Bachelor of Education.
- HUNTER, J. — *Instructor, Food Service Department*; Journeyman Cook; Member of the Academy of Chefs; Member of the Cookery Food Association; Member of the Federation of Canadian Chefs de Cuisine; Southern Alberta Institute of Technology Diploma.
- JAMISON, W. E. — *Administrative Vice-Principal*; Provincial Institute of Technology and Art Diploma; Member of the Canadian Aeronautics and Space Institute.
- JENSEN, O. W. — *Instructor, Structures Department*; Bachelor of Education; Journeyman Carpenter.
- JEWELL, A. T. — *Instructor, Drafting Department*; Provincial Institute of Technology and Art Diploma.
- JEWISON, R. H. — *Director of Instruction*; Bachelor of Science; Bachelor of Education.
- JOBSON, J. D. — *Instructor, Mathematics and Physics Department*; Bachelor of Science (Honours Mathematics).

- JOHANNSSON, F. D. — *Instructor, Mathematics and Physics Department*; Bachelor of Science; Bachelor of Education.
- JOHANSEN, H. — *Instructor, Power Engineering Department*; Steam Engineers Certificate; Member of Danish Marine Engineers Association.
- JOHNSON, C. M. — *Senior Instructor, Electronics Department*; Southern Alberta Institute of Technology Diploma; Journeyman Radio and Television Technician; DOT Certificate of Proficiency in Radio (First Class); Member of the Institute of Electrical and Electronic Engineers; Member of the Alberta Society of Engineering Technologists.
- JOHNSON, F. E. — *Instructor, Chemistry Department*; Bachelor of Science; Member of the Chemical Institute of Canada.
- JONES, W. G. — *Senior Instructor, Aeronautical and Mechanical Department*; Master of Arts (Cantab.); Diploma of the College of Aeronautics; Member of the Canadian Aeronautics and Space Institute.
- KAPLAN, G. S. — *Assistant Director of Instruction*; Bachelor of Science (Engineering); Bachelor of Education; Professional Engineer.
- KASARSEN, Mrs. E. M. — *Instructor, Food Service Department*.
- KEARNS, R. L. — *Instructor, Electrical Department*; Southern Alberta Institute of Technology Diploma; Journeyman Electrician (First Class); Member of the Alberta Society of Engineering Technicians; Associate Member of the Institute of Electrical and Electronic Engineers.
- KEDVES, A. B. — *Instructor, Food Service Department*; Journeyman Baker (Germany).
- KERR, I. H. — *Head, Alberta College of Art*.
- KIRKLAND, Mrs. P. — *Instructor, Food Service Department*.
- KLINGBEIL, F. H. — *Instructor, Drafting Department*; Provincial Institute of Technology and Art Diploma.
- KRISTMANSON, L. W. — *Instructor, Alberta College of Art*.
- LAIRD, J. E. — *Bursar*.
- LANCASTER, W. G. — *Section Head, Mathematics and Physics Department*; Bachelor of Applied Science; Professional Engineer; Member of the Engineering Institute of Canada.
- LARSON, M. E. — *Instructor, Structures Department*; Southern Alberta Institute of Technology Diploma.
- LECKIE, A. R. G. — *Head, Aeronautical and Mechanical Department*; Associate Member of the Institution of Mechanical Engineers; Professional Engineer; Member of the Canadian Aeronautics and Space Institute; Member of the Engineering Institute of Canada; Chartered Engineer.
- LEE, R. J. — *Instructor, Food Service Department*; Journeyman Cook; Member of the Academy of Chefs.
- LOFTHOUSE, R. W. — *Instructor, Chemistry Department*; Master of Science.

- LYTTIK, G. W. — *Instructor, Communication Arts Department.*
- MacCALDER, A. A. — *Instructor, Petroleum Department; Bachelor of Science in Petroleum Engineering; Professional Engineer.*
- MACFARLAN, E. P. — *Instructor, Power Engineering Department; First Class Engineer (Alberta); Member of the Institute of Power Engineers.*
- MACFARLANE, W. T. — *Senior Instructor, Mathematics and Physics Department; Bachelor of Arts; Master of Science; Canadian Association of Physicists.*
- MacLEOD, N. K. — *Instructor, Diesel Department.*
- MAGUIRE, G. W. — *Senior Instructor, Diesel Department; Bachelor of Arts; Bachelor of Science in Agriculture.*
- MANN, H. — *Instructor, Power Engineering Department; Higher National Certificate; First Class Engineer (Alberta).*
- MARANGONI, A. — *Instructor, Chemistry Department; Bachelor of Science; Ghent School of Art Diploma.*
- MARGUET, A. J. E. — *Director of Applied Arts; Bachelor of Arts.*
- MARKERT, N. T. — *Instructor, Structures Department; Bachelor of Education; Journeyman Carpenter.*
- MARTIN, J. R. — *Section Head, Mathematics and Physics Department; Bachelor of Science (Honours).*
- MASSEY-HICKS, M. G. — *Section Head, Electronics Department; National Technical Certificate III (South Africa); Member of the Alberta Society of Engineering Technologists.*
- MASTALIR, Z. P. — *Head, Food Service Department; Southern Alberta Institute of Technology Diploma; Journeyman Cook; Member of the Academy of Chefs; Charter Member of the Canadian Federation of Chefs de Cuisine.*
- MASON, E. A. — *Student Counsellor; Bachelor of Arts; Master of Arts.*
- MATTINGLY, J. T. — *Instructor, Alberta College of Art; Bachelor of Arts; Master of Arts.*
- MAXWELL-MUIR, P. V. — *Instructor, Business Education Department; Bachelor of Arts.*
- McDONALD, R. B. — *Instructor, Drafting Department; Provincial Institute of Technology and Art Diploma.*
- McGREGOR, J. D. — *Senior Instructor, Drafting Department; Bachelor of Architecture; Member of the Royal Architectural Institute of Canada.*
- McILVEEN, L. R. (C.D.) — *Senior Instructor, Drafting Department.*
- McIVOR, D. A. — *Instructor, Diesel Department; Southern Alberta Institute of Technology Diploma.*
- McKENDRY, J. H. — *Instructor, Metals Department; Journeyman Welder (First Class).*
- McKENZIE, C. D. — *Instructor, Communication Arts Department; Bachelor of Arts.*

- McNAUGHT, W. B. — *Instructor, Diesel Department*; Bachelor of Science in Agriculture (Agriculture Mechanics); Member of the Agricultural Institute of Canada.
- McTRAVIS, G. T. — *Instructor, Structures Department*; Journeyman Carpenter.
- MEIER, A. L. — *Instructor, Business Education Department*; Bachelor of Commerce.
- MERRICK, H. O. — *Senior Instructor, Electrical Department*; Journeyman Refrigeration Mechanic; Certificate Member of the Refrigeration Service Engineers' Society.
- MEYER, C. A. — *Instructor, Metals Department*; Journeyman Welder.
- MIDDLETON, J. A. — *Head, Power Engineering Department, and Correspondence Instruction Division*; Provincial Institute of Technology and Art Diploma; First Class Engineer (Alberta); Journeyman Machinist; Affiliate of the Engineering Institute of Canada; Member of the Institute of Power Engineers.
- MIHALCHEON, G. — *Instructor, Alberta College of Art*; Provincial Institute of Technology and Art Diploma; Member of the Alberta Society of Artists.
- MILLER, A. T. — *Senior Instructor, Electrical Department*; Provincial Institute of Technology and Art Diploma; Journeyman Electrician (First Class); Master's Certificate; Member of the Alberta Society of Engineering Technologists.
- MILLER, J. E. — *Senior Instructor, Communication Arts Department*.
- MILLER, R. G. — *Instructor, Mathematics and Physics Department*; Bachelor of Science; Member of Association of Professional Engineers of British Columbia.
- MINTY, J. M. — *Instructor, Metals Department*; Sheet Metal Journeyman.
- MOORE, J. H. — *Section Head, Mathematics and Physics Department*; Bachelor of Science.
- MOORE, J. W. (m.i.d.) — *Instructor, Chemistry Department*; Bachelor of Science.
- MOORE, W. — *Instructor, Automotive Department*; Provincial Institute of Technology and Art Diploma; Journeyman Motor Mechanic; Member of the Society of Automotive Engineers.
- MOTTER, F. D. — *Part-time Instructor, Alberta College of Art*; Bachelor of Fine Art; Member of Alberta Society of Artists.
- MYHRE, H. K. — *Instructor, Mathematics and Physics Department*; Bachelor of Science.
- NAGATA, R. M. — *Instructor, Electrical Department*; Member of Alberta Society of Engineering Technologists.
- NAWATA, T. — *Senior Instructor, Electronics Department*; Provincial Institute of Technology and Art Diploma; Journeyman Radio and Television Technician; Member of the Institute of Electrical and Electronic Engineers.
- NIELSEN, A. B. — *Instructor, Drafting Department*; Technical College Diploma.

- NIELSEN, E. P. — *Instructor, Food Services Department*; Journeyman Cook; Charter Member of the Canadian Federation of Chefs de Cuisine; Member of the Academy of Chefs.
- NODEN, G. E. — *Instructor, Electronics Department*; Southern Alberta Institute of Technology Diploma; DOT Certificate of Proficiency in Radio (Second Class); Associate Member of the Institute of Electrical and Electronic Engineers.
- OBEE, P. N. — *Instructor, Power Engineering Department*; First Class Engineer (Alberta).
- ODELL, D. G. — *Instructor, Diesel Department*; Provincial Institute of Technology and Art Diploma; Journeyman Heavy Duty Mechanic.
- OTTEWELL, W. C. — *Senior Instructor, Metals Department*; Journeyman Plumber and Gasfitter.
- OVERBY, S. E. — *Director of Technology and Trades*; Bachelor of Education.
- PAGE, D. C. — *Instructor, Diesel Department*; Southern Alberta Institute of Technology Diploma; Journeyman Welder (First Class).
- PALMER, F. — *Instructor, Alberta College of Art*; R.C.A.; Member of the Canadian Society of Painters in Water Color; Member of the Alberta Society of Artists.
- PAPP, L. J. — *Instructor, Electronics Department*; Bachelor of Science (Engineering Physics); Professional Engineer.
- PARK, J. D. — *Instructor, Electronics Department*; DOT Certificate of Proficiency in Radio (Second Class).
- PARKER, J. M. — *Instructor, Metals Department*; Journeyman Sheet Metal Mechanic; National Warm Air Heating Certificate.
- PARKIN, D. R. — *Instructor, Communication Arts Department*; Bachelor of Commerce.
- PARSON, N. H. — *Instructor, Automotive Department*; Provincial Institute of Technology and Art Diploma; Journeyman Motor Mechanic; Member of the Society of Automotive Engineers.
- PAUL, E. W. — *Shop Director*; Journeyman Carpenter.
- PEARSE, Mrs. A. L. — *Instructor, Sewing Crafts*.
- PEIRCE, R. A. — *Instructor, Mathematics and Physics Department*; Bachelor of Science.
- PELLE, A. — *Instructor, Diesel Department*; Journeyman Heavy Duty Mechanic; Journeyman Automotive Mechanic.
- PERROTT, J. S. — *Section Head, Alberta College of Art*; Provincial Institute of Technology and Art Diploma; Member of the Alberta Society of Artists.
- PETERS, R. R. — *Senior Instructor, Electronics Department*; Southern Alberta Institute of Technology Diploma; Journeyman Radio and Television Technician; Member of the Alberta Society of Engineering Technologists; Associate Member of the Institute of Electrical and Electronic Engineers.
- PHILLIPS, F. X. — *Part-time Instructor, Alberta College of Art*.

- PODGURNY, M. — *Instructor, Mathematics and Physics Department*; Bachelor of Science in Engineering.
- PRESTON, G. A. — *Instructor, Automotive Department*; Southern Alberta Institute of Technology Diploma; Journeyman Motor Mechanic.
- PRICE, C. R. — *Instructor, Electrical Department*.
- PROCYK, M. F. — *Part-time Instructor, Metals Department*.
- RABY, M. W. — *Senior Instructor, Structures Department*; Provincial Institute of Technology and Art Diploma; Bachelor of Education; Journeyman Carpenter.
- RAMSAY, G. — *Instructor, Metals Department*; Journeyman Plumber and Gasfitter; Master's Certificate.
- RASMUSSEN, H. J. — *Instructor, Diesel Department*; Southern Alberta Institute of Technology Diploma; Journeyman Motor Mechanic; Member of the Society of Automotive Engineers.
- REED, C. N. — *Instructor, Mathematics and Physics Department*; Bachelor of Science; Interim Professional Teaching Certificate.
- REED, W. J. — *Instructor, Structures Department*.
- REID, R. M. — *Senior Instructor, Automotive Department*; Southern Alberta Institute of Technology Diploma; Journeyman Auto Body Mechanic; Journeyman Motor Mechanic.
- REID, W. J. — *Instructor, Metals Department*; Journeyman Gasfitter, Steamfitter and Plumber; Member of Association of Journeyman and Apprentices of Plumbing and Pipe Fitting Industry of United States and Canada.
- ROBERTSON, J. C. — *Instructor, Metals Department*; Southern Alberta Institute of Technology Diploma; Journeyman Welder (First Class).
- ROCKAFELLOW, E. F. — *Senior Instructor, Electronics Department*; Provincial Institute of Technology and Art Diploma.
- ROPER, A. J. — *Director of Extension*; Bachelor of Applied Science; Professional Engineer.
- ROUTLEDGE, P. — *Senior Instructor, Drafting Department*; Professional Engineer.
- RYNING, G. H. — *Instructor, Aeronautical and Mechanical Department*; Provincial Institute of Technology and Art Diploma; Aircraft Maintenance Engineer, "A" and "B;" Member of the Canadian Aeronautics and Space Institute.
- SAMSON, W. J. — *Instructor, Food Service Department*; Bakers Cooking School (Gröningen, Holland) Diploma; Lewis Hotel Training School Diploma; Journeyman Cook.
- SAUNDERS, G. O. — *Senior Instructor, Communication Arts Department*; Bachelor of Commerce.
- SCHAFER, E. D. W. — *Section Head, Electronics Department*; Southern Alberta Institute of Technology Diploma; Journeyman Radio and Television Technician; Member of the Alberta Society of Engineering Technologists; Member of the Institute of Electrical and Electronic Engineers.

- SEALE, G. W. — *Senior Instructor, Aeronautical and Mechanical Department*; Bachelor of Applied Science; Professional Engineer.
- SEXTON, G. A. — *Instructor, Automotive Department*; Southern Alberta Institute of Technology Diploma; Journeyman Motor Mechanic.
- SHARP, W. M. — *Instructor, Structures Department*; Journeyman Carpenter.
- SHEARER, R. R. — *Section Head, Metals Department*; Southern Alberta Institute of Technology Diploma; Journeyman Welder (First Class), Pressure "A" (Gas and Electric); Canadian Welding Bureau, Supervisor Option.
- SHEPHERD, M. J. — *Instructor, Electronics Department*; Journeyman Communication Electrician.
- SHIU, J. D. S. — *Instructor, Chemistry Department*; Bachelor of Science (Chemistry and Mathematics).
- SHYMANSKI, A. F. — *Instructor, Electronics Department*.
- SMITH, J. — *Senior Instructor, Diesel Department*; Journeyman Motor Mechanic; Journeyman Heavy Duty Mechanic; Journeyman Welder; Aircraft Welding Certificate "A"; Aero Engine Mechanic Certificate "A;" Marine Diesel Certificate (2nd Class).
- SMITH, R. C. — *Senior Instructor, Structures Department*; Bachelor of Education; Journeyman Carpenter.
- SMITH, R. E. — *Section Head, Electronics Department*; Southern Alberta Institute of Technology Diploma; Member of the Alberta Society of Engineering Technologists; Member of the Institute of Electrical and Electronic Engineers.
- SMITHERS, R. M. — *Instructor, Mathematics and Physics Department*; Bachelor of Science; Master of Science.
- SOLEY, R. L. — *Registrar*; Bachelor of Arts; Master of Education (Guidance).
- SPARKS, C. J. — *Instructor, Mathematics and Physics Department*; Bachelor of Science.
- SPENCER, H. A. — *Senior Instructor, Diesel Department*; Journeyman Motor Mechanic; Journeyman Heavy Duty Mechanic.
- SPICKETT, R. J. — *Instructor, Alberta College of Art*; Provincial Institute of Technology and Art Diploma; Member of the Alberta Society of Artists; A.R.C.A.
- STASIW, J. A. — *Senior Instructor, Electronics Department*; Provincial Institute of Technology and Art Diploma.
- STENSTROM, G. R. — *Instructor, Structures Department*; Journeyman Glassworker.
- STEPHEN, A. S. — *Instructor, Electronics Department*; Southern Alberta Institute of Technology Diploma; PMG Certificate of Proficiency in Radio (First Class).
- STEPHEN, F. W. — *Instructor, Electronics Department*; PMG Certificate of Proficiency in Radio (First Class).
- STODDART, R. E. — *Instructor, Aeronautical and Mechanical Department*; Aircraft Maintenance Engineer, "A," "B," "D;" Member of the Canadian Aeronautics and Space Institute.

- SWAN, W. (m.i.d.) — *Instructor, Electronics Department*; Bachelor of Science; Associate Member of the Institute of Electrical Engineers (U.K.); Associate Member of the Institute of Electronic and Radio Engineers (U.K.).
- SWITZER, J. J. — *Instructor, Communication Arts Department*; Bachelor of Arts; Bachelor of Education.
- SWYDNYCKY, Z. — *Instructor, Drafting Department*; Provincial Institute of Technology and Art Diploma; Alberta Land Surveyor.
- TETARENKO, L. R. — *Instructor, Mathematics and Physics Department*; Bachelor of Science (Engineering).
- THOMAS, G. E. — *Instructor, Aeronautical and Mechanical Department*; Member of Alberta Society of Engineering Technologists; Aircraft Maintenance Engineer "A."
- THOMSON, K. L. — *Instructor, Alberta College of Art*; Provincial Institute of Technology and Art Diploma.
- THOMPSON, S. H. S. — *Senior Instructor, Business Education Department*; Southern Alberta Institute of Technology Diploma.
- TICKLES, E. J. — *Instructor, Electrical Department*; Provincial Institute of Technology and Art Diploma.
- TIMS, H. — *Instructor, Drafting Department*; Bachelor of Engineering.
- TINKESS, W. R. — *Section Head, Electrical Department*; Bachelor of Science; Professional Engineer; Associate Member of the American Society of Heating, Refrigeration and Air Conditioning Engineers; Professional "A" Teaching Certificate (Sask.).
- TOMLINSON, M. J. — *Head, Structures Department*; Journeyman Carpenter; Affiliate of the Engineering Institute of Canada.
- UNGSTAD, R. — *Instructor, Alberta College of Art*; Provincial Institute of Technology and Art Diploma; Member of the Alberta Society of Artists.
- VAN DUZEE, R. W. — *Instructor, Automotive Department*; Southern Alberta Institute of Technology Diploma; Journeyman Auto Body Mechanic; Journeyman Welder.
- VARVAZOVSKY, W. — *Instructor, Food Service Department*; Southern Alberta Institute of Technology Diploma; Journeyman Cook, Member of the Academy of Chefs; Charter Member of the Federation of Chefs du Cuisine.
- VERVOORT, F. K. — *Instructor, Alberta College of Art*; Fine Arts Honors Diploma, Southern Alberta Institute of Technology.
- WADIA, D. R. — *Instructor, Aeronautical and Mechanical Department*; Bachelor of Science (Honors); Bachelor of Science; Master of Science; Professional Engineer; Associate Member, American Institute of Mining, Metallurgical and Petroleum Engineers; Member of American Society of Metals.
- WAKE, D. C. — *Instructor, Automotive Department*; Southern Alberta Institute of Technology Diploma; Journeyman Motor Mechanic.
- WALLIS, A. — *Instructor, Diesel Department*; Journeyman Heavy Duty Mechanic; City and Guilds of London Institute Certificate.

- WASDEN, E. W. A. — *Instructor, Automotive Department; Southern Alberta Institute of Technology Diploma; Journeyman Motor Mechanic.*
- WATERS, P. M. — *Instructor, Communication Arts Department; Bachelor of Arts.*
- WATT, K. M. (c.s.c.) — *Head, Electronics Department; Journeyman Radio and Television Technician; DOT Certificate of Proficiency in Radio (Second Class); Member of the Institute of Electrical and Electronic Engineers.*
- WERBISKY, C. E. — *Senior Instructor, Electronics Department; Southern Alberta Institute of Technology Diploma; DOT Certificate of Proficiency in Radio (Second Class); Associate Member of the Institute of Electrical and Electronics Engineers; Member of the Alberta Society of Engineering Technologists.*
- WESTLAKE, J. H. (C.D.) — *Section Head, Electronics Department; Bachelor of Science; Professional Engineer; Member of the Institute of Electrical and Electronic Engineers.*
- WHITE, J. R. — *Senior Instructor, Automotive Department; Southern Alberta Institute of Technology Diploma; Journeyman Motor Mechanic.*
- WHITELEY, D. G. — *Instructor, Communication Arts Department; Bachelor of Science; Professional Teaching Certificate.*
- WILLIAMSON, H. A. — *Instructor, Communication Arts Department; Bachelor of Education.*
- WIECZOREK, S. J. — *Instructor, Mathematics and Physics Department; Bachelor of Arts; Bachelor of Education.*
- WILLMAN, G. C. M. — *Instructor, Mathematics and Physics Department; Bachelor of Science (General).*
- WILSON, S. W. — *Instructor, Drafting Department; Bachelor of Science (Civil Engineering); Professional Engineer, Member of the Engineering Institute of Canada.*
- WOLKOWSKI, J. — *Instructor, Power Engineering Department; Student Member, Association of Professional Engineers of Alberta; First Class Engineer (Alberta and Saskatchewan); Member of The Institute of Power Engineers.*
- WOOD, E. (C.D.) — *Instructor, Electrical Department; Journeyman Electrician; Member of the Military Engineers' Association of Canada; Affiliate of the Engineering Institute of Canada; Member of the Alberta Society of Engineering Technologists.*
- WOOD, G. M. — *Art Custodian, Alberta College of Art; Provincial Institute of Technology and Art Diploma.*
- WORKUN, A. P. — *Head, Petroleum Department; Master of Science in Petroleum Engineering; Member of the American Institute of Mining and Metallurgical Engineering; Professional Engineer.*
- WYNNE, F. B. — *Head, Automotive Department; Journeyman Motor Mechanic; Member of the Society of Automotive Engineers; Provincial Institute of Technology Diploma.*
- ZMURCHYK, J. D. — *Instructor, Aeronautical and Mechanical Department; Aircraft Maintenance Engineer, "A;" Member of the Canadian Aeronautics and Space Institute.*

BACK COVER PHOTOGRAPH
An Architectural rendering of the new Tower Building.

